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The challenge of implementation of guideline-based occupational mental health care and workers' return to work

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Contents

Chapter 1 General introduction

This thesis focuses on occupational physicians' adherence to a mental health guideline, and on the sickness absence, recovery and return to work (RTW) in workers sick-listed due to common mental disorders (CMD). Specifically it evaluates the impact of the guideline-based care provided by the occupational physician (OP) on workers' outcomes.

Sickness absence and common mental disorders

As in many Western countries, in the Netherlands, CMD such as depression, anxiety disorders, adjustment disorders, and stress related disorders often lead to long-term sickness absence [1-6]. In the Netherlands the percentage of sickness absence by mental health problems has increased since 2010 [7]. About 36% of long-term sickness absence is caused by mental health problems [7]. Long-term sickness absence causes individual suffering, and may lead to a loss of social contacts with the risk of social isolation, a loss of day structure, reduced probability of eventual RTW with as possible consequence unemployment and a weakened financial position [3, 6]. Besides individual suffering, the financial costs for employers and society are high. The total estimated costs of mental health problems for society are reaching 3.3% of the Gross Domestic Product in the Netherlands [1]. Indirect costs like lost employment, and reduced performance and productivity are much higher than the direct mental health care costs [1, 6, 8, 9]. These indirect costs are estimated at 53% of the total costs of mental health problems for society, compared to 36% for the direct medical costs and 11% for the direct non-medical costs [1]. In view of the substantial consequences for the individual, the employer and society, it is important to reduce the sickness absence duration and facilitate earlier RTW of workers. Moreover, research indicated that employment is beneficial for health, particularly for depression and general mental health [10-12].

Reducing sickness absence duration in workers sick listed due to common mental disorders

In spite of many years of research, it remains a challenge to reduce the sickness absence duration in workers sick listed due to CMD. In several primarily Dutch studies, interventions are developed to reduce sickness absence duration in workers with mental health problems [13-23]. Most of the interventions are not effective in reducing workers' sickness absence duration [14-18, 20, 21]. In some studies implementation problems interfere with the developed interventions and as such also with the findings on the interventions' effectiveness [14, 16, 18]. So far, only few studies have found a positive effect of their intervention on workers' sickness absence duration [13, 19, 22, 23].

Evidence and practice based guidelines and health care

Although in general, evidence based medical practice guidelines are considered as effective tools to improve the quality of care [24, 25], the adherence to these guidelines is generally low among health care professionals [26-30]. Lack of adherence to evidence and practice based guidelines

can lead to omission of necessary health care and contribute to preventable harm and suboptimal patient outcomes [27].

Despite the importance of evidence-based guidelines for the quality of care, and the need for shortening the duration of the RTW process in workers with mental health problems, evidence and practice based guidelines for occupational health professional to manage mental health problems in workers so far exist in only a few countries, namely in The Netherlands, United Kingdom, Japan, Finland, and the Republic of Korea [31]. Specifically for OPs the Netherlands Society of Occupational Medicine (NVAB) developed (in 2000) and revised (in 2007) an evidence and practice based guideline named 'Management of mental health problems of workers by OPs' [32, 33]. This guideline aims to improve the quality of provided occupational care and by that to advance the recovery and RTW process of the sick listed worker. Beyond, in this thesis this guideline will be called the (Dutch) occupational mental health guideline.

The Dutch occupational mental health guideline contains (key) recommendations that should contribute to recovery and optimal RTW of workers. The guideline recommends OPs to monitor and evaluate the process of recovery and RTW, and in case of stagnation of the process to use cognitive behavioral techniques to enhance the problem-solving capacity of the sick listed worker [33]. This occupational mental health guideline has been disseminated among the Dutch occupational health services and OPs by NVAB, and has become part of their continuing medical education (nationally and locally). According to the professional Statute for OPs by the NVAB, it is expected that all OPs obtained the required skills to perform in accordance with the guideline.

Organization of Dutch occupational health care system

In the Netherlands, according to the Dutch Gatekeeper Improvement Act [34], both employer and worker are responsible for taking care of the recovery and RTW process. They risk high financial fines if they do not cooperate. By law, the employer is obliged to pay at least 70% of the wages during the sickness absence for a period of two years after the start of the sickness absence. During this two year period the sick listed workers cannot be fired. The employer is also obliged to provide access to occupational health care for the sick listed worker, and to make work adaptations if necessary. Employers contract an independently operating occupational health service, which provides occupational health care, or contract an independent occupational health professional. The occupational health professional has a central role in the Dutch social security system, and is the link between workers' health and the work situation. Thereby, the occupational health professional might have the ability to play an important role in the recovery and RTW process of a sick listed worker. The OP guides the worker during the recovery and RTW process and provides advice to the employer. Within the first six weeks after the first day of sickness absence the worker, employer and OP have to develop a joint reintegration plan.

Occupational physicians and the Dutch occupational mental health guideline

OPs' adherence to the first edition of the Dutch guideline showed to be low [19, 35, 36]. A retrospective study on the effect of this first edition of the Dutch occupational mental health guideline showed that closer adherence to this guideline was associated with a shortened sickness absence in workers with adjustment disorders [35]. Another study in which OPs received a three-day guideline training showed that, although OPs had a positive attitude towards using the first edition of the guideline, their actual adherence to the occupational mental health guideline was limited [19, 36]. However, despite the promising association of guideline adherence and a shortened sickness absence, implementing the Dutch occupational mental health guideline in practice is still challenging. The impact of the revised edition of the occupational mental health guideline on the provided guideline-based care by OPs and on the workers' recovery and RTW needs to be evaluated.

Content of the Dutch occupational mental health guideline

The revised edition of the Dutch occupational mental health guideline which is the focus of this thesis, consist of four consecutive steps: 'Problem orientation and Diagnosis', 'Intervention / Treatment', 'Relapse prevention', and 'Continuity of care / Evaluation' [33].

In the first step, called 'Problem orientation and Diagnosis', early involvement of the OP is promoted (first consultation within two weeks after the workers reporting sick). A simplified classification of mental health problems in four categories, indicative for different policies, is introduced: a) stress-related complaints (such as adjustment disorders), b) depression, c) anxiety disorder, and d) other psychiatric disorders. The OP also provides a diagnosis, and if necessary the OP refers the worker to a mental health professional for treatment. Furthermore, the problem inventory focuses on factors related to the worker and the work environment as well as the interaction between these two.

In the second step, called 'Intervention / Treatment', the OP acts as a case manager by monitoring and evaluating the process of recovery. If recovery stagnates, the OP intervenes by acting as a care manager, and uses cognitive behavioural techniques to enhance the problem-solving capacity of the worker (e.g. by encouraging the worker to make an inventory of the factors that obstruct the performance of work tasks, to find solutions to solve these problems, to mobilize help if necessary and to practice these solutions during the recovery process). Furthermore, the OPs provides the worker and work environment with information/advice on the recovery and the RTW process, contacts the general practitioner when problems remain the same or increase, and refers the worker to a specialised intervention if necessary. In addition, the OP advises the employer and work environment (e.g. supervisors, managers, human resource managers) how to support the worker and enhance the recovery and RTW process.

According to the third step, called 'Relapse prevention', the OP integrates relapse prevention from the first contact with the worker by enhancing the problem-solving capacity of

the worker. The newly acquired problems solving skills are resumed in at least one specific relapse prevention consultation after RTW.

According to the fourth step, called 'Continuity of care / Evaluation', consultations with the worker take place every three weeks during the first three months, and then every six weeks thereafter. During these follow-up consultations evaluation of the recovery process includes the perspectives of the worker, employer, and other involved professionals. The OP contacts the employer or work environment once a month. In addition, follow-up contacts with the general practitioner or other professionals take place if the recovery process stagnates or if there is doubt about the diagnosis of treatment.

Intervention to enhance guideline adherence by occupational physicians

To improve adherence to the occupational mental health guideline, a tailored implementation strategy based on findings from scientific implementation literature on how to improve guideline adherence is developed for this study [29, 37-40]. According to the literature, more active implementation strategies are needed [29, 40] rather than dissemination among professionals and short introductions. Preferably, these active implementation strategies are tailored for a specific target group and setting, and they intend to eliminate perceived barriers that hinder physicians from using guidelines [24, 39, 41]. Moreover, to successfully overcome barriers for guideline use, the target users of a guideline should be actively involved in identifying barriers for specific guideline recommendations and selecting solutions [38]. In line with this aim, an intervention to enhance OPs' guideline adherence was developed, focusing on identifying and solving the barriers for applying this guidelines' (key) recommendations.

The tailored intervention consists of an eight-session training in small peer-learning groups, takes place over 12 months, and is focused on barriers that hindered OPs from using specific recommendations of this guideline in practice. Each session took two hours and the group size was about four to six OPs. According to the model of Cabana et al. [42], guideline adherence can be affected by three main clusters of barriers: 1) knowledge-related barriers (lack of awareness and lack of familiarity), 2) attitude-related barriers (lack of agreement, lack of self-efficacy, lack of outcome expectancy, and inertia of previous practice/lack of motivation) and 3) external barriers that hinder physicians to apply the guideline in practice (patient factors, guideline recommendation factors, and environmental factors) (see Table 2 in Chapter 3).

During eight sessions, the guidelines' (key) recommendations are discussed by the participating OPs. First, the OPs focus on barriers that hinder them to use a specific recommendation in practice. They exchange and discuss their perceived barriers, and they structure the discussed barriers in accordance with the model of Cabana [42]. Second, the OPs discuss possible solutions to address the perceived barriers taking into account the context of their daily practice. Third, the OPs draw up a joint action plan of how to implement the suggested solutions in daily practice, and they agreed on learning objectives and 'homework' assignments.

Between the meetings (intervals of about six weeks) the OPs practice the suggested solutions to experience if and how these can help to apply the guidelines' (key) recommendations. During the next meeting the experiences of the OPs are evaluated and, if necessary, the solutions are adjusted to what the OPs have experienced in practice. This cycle of plan-do-check-act [43] is repeated in each meeting for all the recommendations stated in the guideline.

Conceptual model of this thesis

Based on the promising results regarding the associations between OPs' guideline adherence and earlier RTW of workers with mental health problems [35, 36], and the fact that generally, the actual adherence to guidelines of physicians is low [26-30], this thesis focuses on enhancing OPs' guideline adherence and reducing workers' sickness absence duration. It is expected that better adherence will lead to better occupational care and earlier work resumption of the worker sick listed due to CMD (see Figure 1). Therefore a tailored intervention on the level of OPs is developed based on scientific implementation literature on how to solve barriers for guideline use and to improve medical guideline adherence. The impact of this intervention is evaluated on the level of the OP and on the level of the workers sick listed due to CMD.

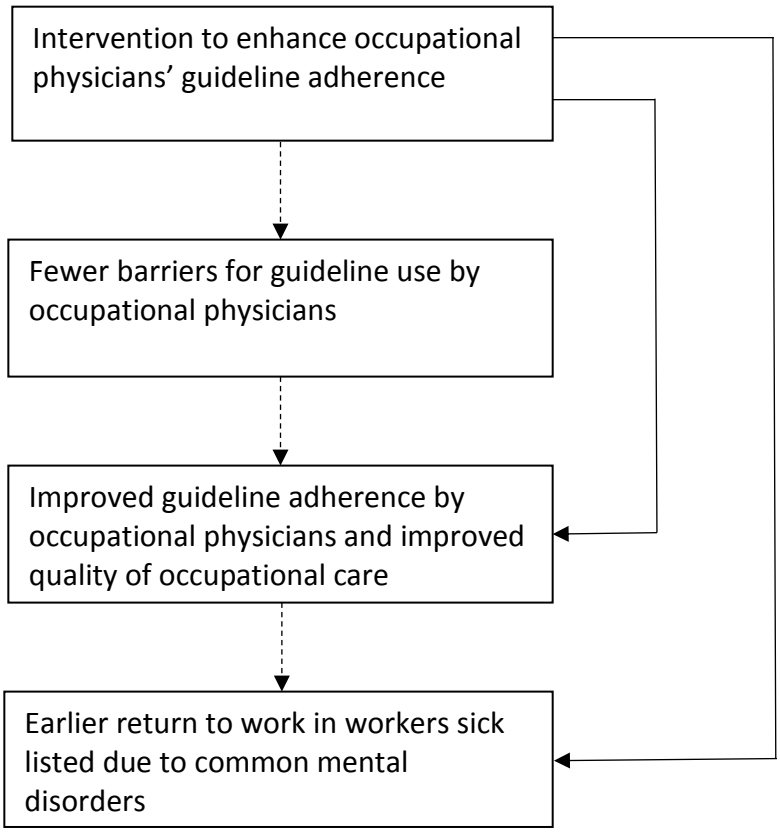

Figure 1 Conceptual model of this thesis

Objectives of this thesis

The overall aim of this thesis was to evaluate if guidelines adherence and as a consequence occupational health care could be improved, and if this would lead to earlier RTW in workers sick listed due to mental health problems.

The specific research objectives of this thesis are:

- To evaluate the feasibility and impact of the provided implementation strategy to enhance OPs' guideline adherence.
- To evaluate OPs' perceived barriers for guideline use and their own tested solutions
- To evaluate the effect of the intervention to enhance OPs' guideline adherence on actual guideline adherence by OPs.
- To evaluate the short-term effect of the intervention to enhance OPs' guideline adherence on the 'RTW self-efficacy' of workers sick listed due to CMD.
- To evaluate the long-term effect of the intervention to enhance OPs' guideline adherence on sickness absence duration in workers sick listed due to CMD.
- To evaluate the association between OPs' guideline adherence and sickness absence duration in workers with CMD.

Thesis outline

Chapter 2 describes the design of the study, a cluster randomized controlled trial, in which the intervention to enhance OPs' guideline adherence and the workers' outcomes are evaluated.

Chapter 3 explores the feasibility and impact of the tailored implementation strategy and if this intervention was conducted as planned. The effect of the intervention on OPs' knowledge, attitudes, perceived barriers for using the guideline, and perceived guideline adherence is evaluated.

Chapter 4 gives an overview of OPs' perceived barriers for using the guideline and suggested solutions to solve these barriers in practice.

Chapter 5 presents the results of the cluster controlled randomized trial, in which the effect of the intervention to enhance OPs' guideline adherence on the actual guideline adherence by OPs is evaluated.

Chapter 6 evaluates the short-term effect of the intervention to enhance OPs' guideline adherence on the RTW self-efficacy in workers three months after start sickness absence. It is also evaluated whether the intervention modified the association between RTW self-efficacy and RTW three months later.

Chapter 7 presents the results of the cluster controlled randomized trial, in which the long-term effect of the intervention to enhance OPs' guideline adherence on the sickness absence duration of workers is evaluated.

Chapter 8 presents the associations between OPs' guideline adherence and first and full RTW of workers with CMD during one year follow up after the start of the sickness absence. Possible confounders are included.

Chapter 9 discusses the main findings of this thesis, the methodological considerations and the implications of the findings for guideline development, implementation of guidelines, occupational health services, OPs, employers, and future research.

Finally, this thesis contains a summary in English and Dutch.

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Chapter 2

Effectiveness of guideline-based care by occupational physicians on the return-to-work of workers with common mental disorders: design of a cluster-randomised controlled trial.

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Abstract

Background

Sickness absence due to common mental disorders (such as depression, anxiety disorder, adjustment disorder) is a problem in many Western countries. Long-term sickness absence leads to substantial societal and financial costs. In workers with common mental disorders, sickness absence costs are much higher than medical costs. In the Netherlands, a practice guideline was developed that promotes an activating approach of the occupational physician to establish faster return-to-work by enhancing the problem-solving capacity of workers, especially in relation to their work environment. Studies on this guideline indicate a promising association between guideline adherence and a shortened sick leave duration, but also minimal adherence to the guideline by occupational physicians. Therefore, this study evaluates the effect of guideline-based care on the full return-to-work of workers who are sick listed due to common mental disorders.

Methods/Design

This is a two-armed cluster-randomised controlled trial with randomisation at the occupational physician level. During one year, occupational physicians in the intervention group receive innovative training to improve their guideline-based care whereas occupational physicians in the control group provide care as usual. A total of 232 workers, sick listed due to common mental disorders and counselled by participating occupational physicians, will be included. Data are collected via the registration system of the occupational health service, and by questionnaires at baseline and at 3, 6 and 12 months. The primary outcome is time to full return-to-work. Secondary outcomes are partial return-to-work, total number of sick leave days, symptoms, and workability. Personal and work characteristics are the prognostic measures. Additional measures are coping, self-efficacy, remoralization, personal experiences, satisfaction with consultations with the occupational physician and with contact with the supervisor, experiences and behaviour of the supervisor, and the extent of guideline adherence.

Discussion

If the results show that guideline-based care in fact leads to faster and sustainable return-to-work, this study will contribute to lowering personal, societal and financial costs.

Trial registration ISRCTN86605310

Background

Sickness absence due to common mental disorders (CMD), such as depression, anxiety disorder and adjustment disorder, is a problem in many Western countries, including Sweden, Germany, the UK and the Netherlands [1]. Moreover, CMD have negative consequences for the worker. They affect functioning in private life and can lead to long-term absenteeism, which is associated with individual suffering, reduced probability of eventual return-to-work (RTW), a weakened financial position, social isolation, and exclusion from the labour market [2, 3]. Only 50% of the workers sick listed for 6 months or more return to their work [4]. In workers with CMD, sickness absence costs are reported to be much higher than the medical costs, mainly due to the long duration of a sick leave period [5, 6]. In addition, (long-term) sickness absence leads to substantial social and financial costs for society [3]. In the Netherlands, about one third of people receiving disability benefits do so because of mental health problems [7, 8] of which most are CMD [7]. The annual costs of sickness absence due to CMD are estimated at 2.7-7.5 billion euros [6, 9].

In 2000, the Netherlands Society of Occupational Medicine (NVAB) developed a practice guideline entitled 'The management of mental health problems of workers by occupational physicians' and revised it in 2007 [10, 11]. This guideline, which is both practice and evidence-based, promotes an activating approach by the occupational physician (OP) aimed to establish faster RTW by enhancing the problem-solving capacity of workers, especially in relation to their work environment [7]. The guideline was disseminated among Dutch occupational health services (OHS) and OPs. In addition, educational meetings were organised (nationally and locally) for OPs to increase their knowledge on the guideline content. The OPs themselves and the OHS are expected to obtain the required skills to perform in accordance with the guideline. However, a retrospective study showed that the quality of the occupational care provided did not fully meet the requirements of the guideline, and that in workers with adjustment disorders closer adherence to this guideline was associated with a shortened sick leave duration [12]. Another Dutch study provided OPs with a three-day training in guideline use; results showed that, although their compliance was minimal, OPs had a positive attitude towards using the guideline [6, 13]. Therefore, present study investigates whether guideline adherence leads to faster and sustainable RTW of workers with CMD.

Aim of this study

To evaluate the effect of guideline-based care by OPs on the full RTW of workers sick listed due to CMD.

Methods/Design

In describing the design of this study the CONSORT 2010 statement was followed to improve the reporting quality for randomized controlled trials (RCT) [14].

Study design

The study is designed as a two-armed cluster RCT with randomisation at the OP level (Figure 1). All participating OPs are recruited from a large collaborating OHS in the Netherlands. The OPs are randomised to an intervention group or a control group. Using an innovative training, OPs in the intervention group are trained to counsel sick-listed workers according to the Dutch national guideline 'Management of mental health problems of workers by occupational physicians'. OPs in the control group receive no training and counsel sick-listed workers with care as usual. Workers are invited by the OHS after their first meeting with the OP. Data on sick leave and RTW of all invited workers are anonymously extracted from the registration system of the OHS during 1-year follow-up. In addition, in case of consent the worker receives a questionnaire at baseline (T0), and at 3 months (T1), 6 months (T2) and 12 months (T3) post baseline. In addition, 2 months after baseline a short questionnaire is sent to their supervisor.

The Medical Research Ethics Committee of Elisabeth Hospital in Tilburg approved the study design, protocol, information letter and brochure, questionnaires, and informed consent. Participation of workers is voluntary and all participants signed an informed consent. Each participant was informed about their right to withdraw from the study at any time.

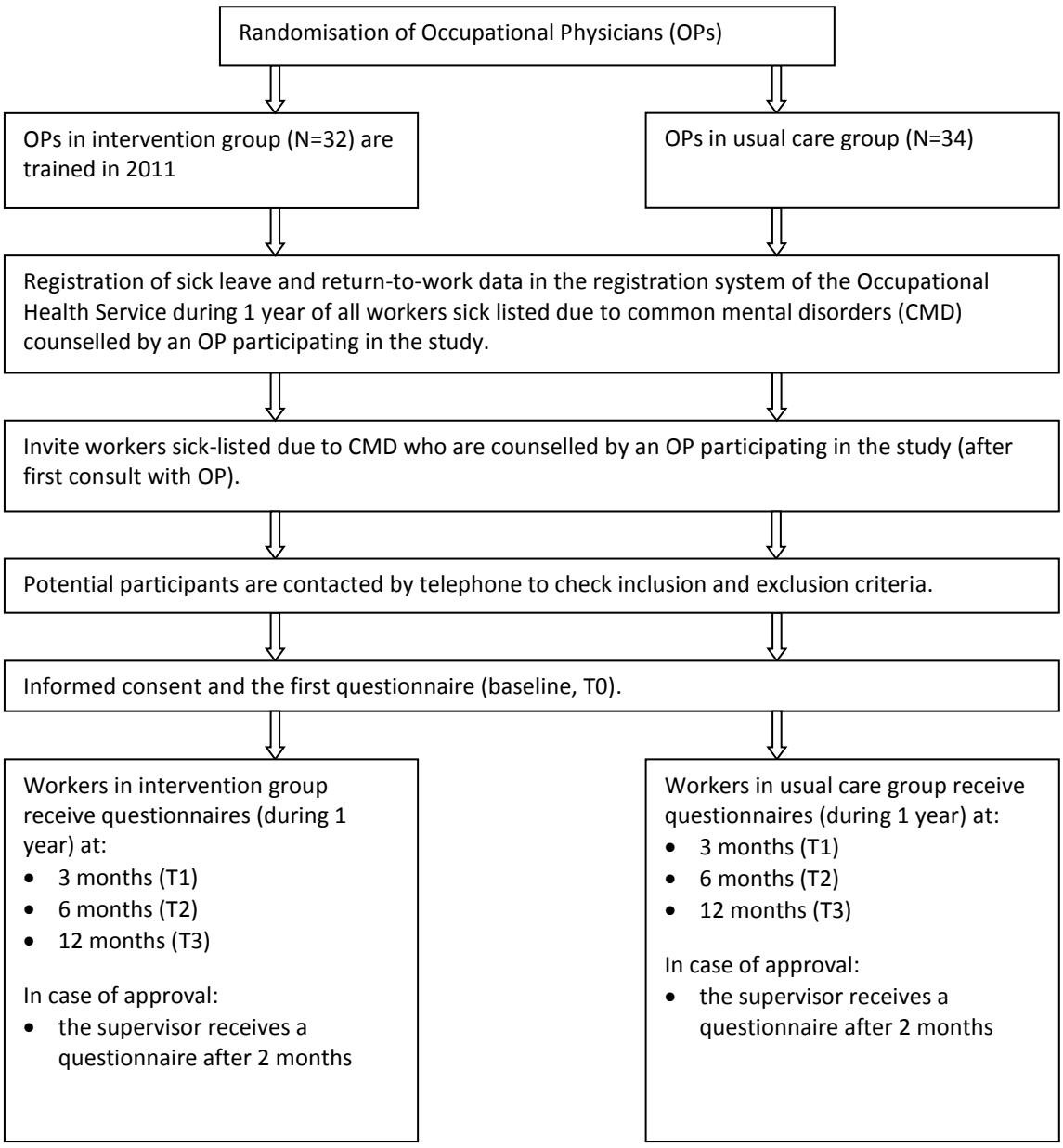

Figure 1 - Flow diagram of the study design

Intervention

Intervention/Guideline-based care

The Dutch guideline 'The management of mental health problems of workers by occupational physicians' promotes an activating approach of the OP as case and care manager to enhance the problem-solving capacity of the workers to achieve RTW. The guideline is based on cognitive behavioural principles to enhance the problem-solving capacity of workers in relation to their work environment, and process-based evaluation.

The guideline consists of four consecutive steps:

1) Problem orientation and Diagnosis: an early involvement of the OP is promoted (first assessment and start of counselling about 2 weeks after the worker reported sick). A simplified classification of mental health problems is introduced in four categories: i) Stress-related complaints, ii) depression, iii) anxiety disorder, and iv) other psychiatric disorders. Furthermore, problem inventory should focus on factors related to the worker and their work environment and the interaction between these two.

2) Intervention/Treatment: the OP acts as case manager by monitoring and evaluating the process of recovery (process-based evaluation). When recovery stagnates OPs should intervene by acting as care manager by using cognitive behavioural techniques to enhance the problem-solving capacity of the worker, providing the worker and work environment with information/advice on the recovery and the RTW process, contact the general practitioner when problems remain the same or increase, and refer the worker to a specialised intervention when necessary. In addition, the OP should advise the work environment (e.g. supervisors, managers, human resource managers) how to support the worker and enhance the recovery and RTW process.

3) Relapse prevention: Integration of relapse prevention from the first contact with the worker by enhancing the problem-solving capacity of the worker.

4) Evaluation: During follow-up meetings evaluation of the recovery process includes the perspectives of the worker, supervisor, and other involved professionals. Follow-up meetings with the worker should take place every 3 weeks during the first 3 months, and then every 6 weeks thereafter. The supervisor or work environment should be contacted once a month. Follow-up contacts with the general practitioner or other professionals should take place when the recovery process stagnates or when there is doubt about the diagnosis or treatment.

Content of the training

OPs participating in the study and allocated to the intervention group received training in the guideline before the start of the study. This training was specifically designed for the purpose of this study and consisted of 8 meetings within 12 months. Each meeting took 2 h and was provided in groups of 4-6 OPs under the guidance of a trainer. The aim of the training was to enhance guideline adherence of the participating OPs by focussing on barriers that prevent OPs from using the guideline and finding solutions to overcome these barriers. This is considered to be a successful strategy for the implementation of guidelines [16, 17].

During the 8 meetings the (key) recommendations within each consecutive step of the guideline were discussed. These discussions first focussed on barriers that would hinder OPs from using the specific recommendation in practice. The analysis of barriers was structured and based on an existing framework of barriers [15]. According to this framework guideline adherence can be affected by three main categories: 1) knowledge-related barriers (lack of awareness and lack

of familiarity), 2) attitude-related barriers (lack of agreement, lack of self-efficacy, lack of outcome expectancy and lack of motivation/inertia of previous practice) and 3) external barriers that hinder physicians to apply the guideline in practice (guideline factors, environmental factors and patient factors). Second, the OPs in the group were invited to suggest solutions to address the perceived barriers taking into account the context of their daily practice. Third, the OPs drew up an action plan of how to implement these solutions in their daily practice, and agreed on learning objectives and 'homework' assignments. Between the meetings (a period of about 6 weeks) the OPs practiced the suggested solutions to experience if and how these would help to apply the guideline recommendations. During the next meeting the experiences of the OPs were evaluated and, when necessary, the solutions were adjusted to what the OPs had experienced in practice. This cycle of plan-do-check-act was repeated in each meeting for all the recommendations stated in the guideline.

Care as usual

The OPs in the control group do not receive additional training. They provide care as usual to workers on sick leave. In the Netherlands this means that the OP guides the sick-listed worker during sickness absence, recovery, and RTW. In this process the OP makes a diagnosis, assesses the ability to work, gives advice on work adaptations to the worker and the work environment, and provides relapse prevention. Although OPs are expected to work in accordance with the Dutch guideline, their actual adherence is low [12, 13].

The extent of guideline adherence of the participating OPs will be measured by auditing the medical records of workers.

Recruitment of OPs

All 66 participating OPs were recruited between October 2010 and January 2011 from the collaborative OHS. A researcher presented the study during OP meetings at several agencies of the OHS, provided written information about the study, and provided a registration form and informed consent. OPs participated on a voluntary basis; after completing the training the OPs in the intervention group received educational credits.

Recruitment of participants

The study is conducted in the southern part of the Netherlands. The workers eligible for this study are on sick leave due to CMD diagnosed by the OP, counselled by an OP participating in the study, have had a first meeting with the OP, and are aged 18-65 years. From all eligible workers data on sick leave and RTW will be extracted from the registration system of the OHS anonymously.

Workers eligible for the data collection by means of the questionnaires work at one of the ± 320 companies served by this collaborating OHS that gave permission to invite their workers. The companies vary in size and serve different sectors. These workers are selected from the

registration system of the OHS after their first consultation with the OP. They are sent an invitation letter from the OHS, as well as written information about the study. Workers who do not want to be contacted further can indicate this on a reply card. All eligible participants are contacted for additional information, and to check the inclusion and exclusion criteria. If the worker is willing to participate in the study and meets all the selection criteria, an informed consent and the baseline questionnaire will be sent to the worker.

Inclusion criteria for this study are: 1) CMD is the primary reason for sick leave diagnosed by an OP according to the Dutch Classification of Diseases (CAS) which is based on the ICD-10, 2) on current sick leave when selected from the registration system of the OHS after the first meeting with the OP, and 3) adequate command of the Dutch language. Exclusion criteria are: being suicidal, and a physical problem being the primary reason for sick leave at the time of study inclusion.

Outcomes

Table 1 presents an overview of the collected data and the study time path.

Primary outcome

The primary outcome is the time to full RTW. For this purpose the number of calendar days between the first day of sickness absence due to CMD and the first day of full RTW is calculated. Working the same hours as prior to the sickness absence in own or equivalent work for at least 4 weeks is considered full RTW. This means that reporting sick within 4 weeks of full RTW is not considered as a new period of sickness absence.

Secondary outcomes

- Partial RTW is defined as the number of calendar days between the first day of sickness absence due to CMD and the first day of RTW, irrespective of the number of working hours per week.
- Total number of calendar days of sick leave is calculated for the 1-year follow-up period.
- CMD symptoms are measured by the Four Dimensional Symptoms Questionnaire (4DSQ), a self-report questionnaire measuring the four dimensions of common psychopathology: distress, depression, anxiety and somatisation. The 4DSQ consists of 50 items (each scored on a 5-point scale) and refers to symptoms during the past week. The 4DSQ has good psychometric properties [18].
- Burnout symptoms are measured by the Utrechtse Burnout Scale–General Survey (UBOS) [19], which is the Dutch version of the Maslach Burnout Inventory (MBI). The UBOS is a self-report questionnaire which measures three subscales: emotional exhaustion, mental distance, and competence. Higher scores on exhaustion and distance and lower scores on competence indicate burnout. The UBOS is a reliable and valid instrument [20].

- Workability is measured by three questions (items 1, 2, 3) of the shortened version of the Work Ability Index (WAI) [21, 22]. The WAI is a self-report questionnaire and is a reliable and valid instrument [23, 24].

Prognostic measures

- Personal characteristics such as age, gender, level of education, sick leave in the previous year, history of mental disorders, and expectations about full RTW are measured at baseline.
- Work characteristics such as number of working hours, contract type, type of work, profession and job content are measured at baseline. Job content is measured with the Dutch version of the Job Content Questionnaire (JCQ) [25], a self-report questionnaire which measures the social and psychological characteristics of jobs. The JCQ assesses the following scales: psychological job demands, decision latitude, social support, physical demands and job insecurity.

Additional measures

Factors which can be influenced by the intervention and thereby can influence RTW are also measured. The results of these additional measures will be reported separately from the results of this RCT.

- Coping style is measured with the shortened 19-item version of the Utrecht Coping List (UCL) [26], a self-report questionnaire which measures coping behaviour. The 19-item version assesses the following scales: 1) active problem solving, 2) seeking social support, 3) palliative reaction pattern, 4) avoidance behaviour, and 5) expression of emotions.
- Self-efficacy with regard to RTW is measured by the RTW-SE for workers with mental problems. The RTW-SE is a self-report questionnaire which assesses the self-efficacy in the RTW process. The RTW-SE shows promising reliability, validity and prediction of actual RTW within 3 months [27].
- Remoralization (perception of recovery) is measured with the 12-item Remoralization Scale (RS-12). The RS-12 is a self-report questionnaire which indicates the level of morale in mental health care and has shown promising reliability and validity [28].
- Workers' experiences with the consultations with their OP, and the contact with their supervisor, are measured. For example, the number and content of the consultations, and the topics of the conversations. Satisfaction with the counselling by the OP is measured with an adapted version of the Patient Satisfaction with Occupational Health Professionals Questionnaire (PSOHPQ) [29].
- Experiences of the supervisor are measured using self-formulated questions. This questionnaire includes topics such as the contact with worker and the OP, previous experience with CMD and sick leave in general, and policy on sick leave and RTW.

Table 1 – Collection of data and time path

Topic	**Instrument**	**Baseline**	**Follow-up**		
		T0	**T1**	**T2**	**T3**
			3 months	6 months	12 months
Primary outcome					
Full RTW	registration system of the occupational health care service	X	X	X	X
Personal characteristics					
Gender, age, level of education, diagnosis by OP, sick leave in the previous year, history of mental disorders, expectations about full RTW.		X			
Work characteristics					
Type of function, number of working hours, contract type.		X			
Job content	JCQ	X	X	X	X
Secondary outcomes					
Partial RTW	registration system of the occupational health care service	X	X	X	X
Total numbers of sick leave days	registration system of the occupational health care service	X	X	X	X
CMD symptoms	4DSQ	X	X	X	X
Burnout symptoms	UBOS	X	X	X	X
Workability	3 questions of WAI	X	X	X	X
Additional outcomes					
Coping	Shortened 19-item version UCL	X	X	X	X
Self-efficacy	RTW-SE	X	X	X	X
Remoralization	RS-12	X	X	X	X
Experienced barriers, facilitators and social support for RTW		X	X	X	X
Experience and satisfaction with OP	Adapted version PSOHPQ	X	X	X	X
Experience and satisfaction with supervisor		X	X	X	X
2 months after inclusion					
Experiences supervisor contact with worker, sick leave worker, work adaptations, contact with OP, CMD and sick leave, policy on sick leave and RTW			X		
Personal characteristics supervisor			X		

Sample size

A power analysis was performed to determine the sample size needed to detect a difference between the control and intervention group with respect to the time workers fully return to their work (primary outcome measure). Proportions of full RTW were adopted from previous studies [7, 30]. It was assumed that in the usual care (control) group 55% of the workers would have returned to work after 3 months and 75% after 6 months, whereas in the intervention group these figures would be 75% and 90%, respectively. With a power of 80% at a 0.05 alpha level, assuming an ICC of 0.025 and taking into account a correction factor for the clustered design, it was calculated that 2 x 97 workers would be needed to detect the difference after 3 months and 2 x 110 workers for the difference after 6 months. Allowing for 5% attrition on the sick leave data, a total of 232 workers need to be included.

Randomisation

Randomisation takes place at the OP level, because workers cannot be randomly allocated to an OP in the intervention group or an OP in the control group since every OP is allied to a specific company. All participating OPs are randomised by computerised allocation to the intervention group or control group at OHS agency level.

Blinding

Workers and companies are blinded for randomisation since they are not aware of the allocation of their OP. The researcher who performs the analyses (KvB) is blinded for allocation to intervention or care as usual.

Statistical analysis

Survival analyses will be used to analyse the primary outcome (time to full RTW) and the time to partial RTW comparing the intervention and the control group, while taking into account the effect of clustering of workers within OPs. Longitudinal multilevel analysis will be used to analyse the secondary outcomes.

To detect significant differences in the baseline characteristics between the intervention group and control group descriptive analyses will be used. If necessary these differences will be taken into account in the effect evaluation.

Discussion

The societal relevance of this study consists of substantial personal, social and financial savings if guideline-based care leads to faster and sustainable RTW of workers with CMD. Since previous studies indicate that guideline adherence of OPs can lead to a shortened sick leave duration [6, 12, 13], the training described in this study aims to improve the OPs' guideline adherence.

Therefore, the present study evaluates the effect of guideline-based care on full RTW of workers with CMD.

Strengths and limitations

A strength of this study is the collaboration with one of the largest OHS in the Netherlands; this provides a diversity of companies covering many sectors, yielding a heterogeneous population which allows to generalise the results to a larger working population. Furthermore, because the innovative training is spread over one year, OPs can explore the barriers, apply solutions, evaluate their experiences, and adapt the solutions until they are useful in daily practice. This is in contrast to earlier studies which evaluated short term training only. Another strength is that the participating workers are selected by the registration system of the OHS and not by OPs; this may prevent selection bias from the individual OPs. Finally, the workers are blinded for randomisation to the intervention or control group to prevent performance bias.

Limitations: although the extent of guideline adherence by OPs will be measured by auditing the medical records of workers, there is a risk that this will not provide accurate information on guideline adherence: e.g. OPs might not document everything that occurred during the counselling. Another limitation might be that 232 workers are needed and followed during one year, whereas earlier studies had a problem recruiting sufficient workers. However, collaborating with one of the largest OHS in the Netherlands should ensure sufficient sick-listed workers, i.e. 60 OPs need to counsel 3-4 workers each to reach the total of 232 workers.

Impact of study results

This study will show whether guideline-based care in fact leads to faster and sustainable RTW. If the results are promising, this study will contribute to lower societal and financial costs and less negative consequences for workers with CMD. The training may also give OPs the tools to better handle the guideline in daily practice. Moreover, the approach applied in this study may be relevant for the implementation of this and other (occupational) guidelines in daily practice. Results of this study will become available in 2015.

Abbreviations

CMD: common mental disorders
RTW: return-to-work
OP: occupational physician
OHS: occupational health service
NVAB: The Netherlands Society of Occupational Medicine
CAS: Dutch Classification of Diseases
4DSQ: Four Dimensional Symptoms Questionnaire
UBOS: Utrechtse Burnout Scale
WAI: Work Ability Index
JCQ: Job Content Questionnaire
UCL: Utrecht Coping List
RTW-SE: return-to-work self-efficacy scale
RS-12: 12-item Remoralization Scale
PSOHPQ: Patient Satisfaction with Occupational Health Professionals Questionnaire

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Competing interests

BT is the copyright owner of the 4DSQ and receives copyright fees from companies that use the 4DSQ on a commercial basis (the 4DSQ is freely available for noncommercial use in health care and research). BT received fees from various institutions for workshops on the application of the 4DSQ in primary care settings.
JvdK was manager and main author in the development of the NVAB guideline. JvdK does not receive fees for the use of the guideline.
KvB, EB, MJ declare that they have no competing interests.

Authors' contributions

EB, BT, JvdK, JvW, KvB, MJ designed the study and developed the intervention. KvB drafted the manuscript and is responsible for the data collection of the effect study. All authors provided comments on the drafts of the manuscript and approved the final version of the manuscript.

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Chapter 3

Improving occupational physicians' adherence to a practice guideline: feasibility and impact of a tailored implementation strategy

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Abstract

Background

Although practice guidelines are important tools to improve quality of care, implementation remains challenging. To improve adherence to an evidence-based guideline for the management of mental health problems, we developed a tailored implementation strategy targeting barriers perceived by occupational physicians (OPs). Feasibility and impact on OPs' barriers were evaluated.

Methods

OPs received 8 training-sessions in small peer-learning groups, aimed at discussing the content of the guideline and their perceived barriers to adhere to guideline recommendations; finding solutions to overcome these barriers; and implementing solutions in practice. The training had a plan-do-check-act (PDCA) structure and was guided by a trainer. Protocol compliance and OPs' experiences were qualitatively and quantitatively assessed. Using a questionnaire, impact on knowledge, attitude, and external barriers to guideline adherence was investigated before and after the training.

Results

The training protocol was successfully conducted; guideline recommendations and related barriers were discussed with peers, (innovative) solutions were found and implemented in practice. The participating 32 OPs were divided into 6 groups and all OPs attended 8 sessions. Of the OPs, 90% agreed that the peer-learning groups and the meetings spread over one year were highly effective training components. Significant improvements ($p < .05$) were found in knowledge, self-efficacy, motivation to use the guideline and its applicability to individual patients. After the training, OPs did not perceive any barriers related to knowledge and self-efficacy. Perceived adherence increased from 48.8% to 96.8% ($p < .01$).

Conclusions

The results imply that an implementation strategy focusing on perceived barriers and tailor-made implementation interventions is a feasible method to enhance guideline adherence. Moreover, the strategy contributed to OPs' knowledge, attitudes, and skills in using the guideline. As a generic approach to overcome barriers perceived in specific situations, this strategy provides a useful method to guideline implementation for other health care professionals too.

Background

Many evidence-based practice guidelines exist in health care, but adherence to these guidelines is generally low among care professionals [1-3]. Lack of adherence to practice guidelines can lead to omission of necessary care and contribute to preventable harm, suboptimal patient outcomes, or poor resources utilization [3]. Thus, implementation of and adherence to practice guidelines is important for improving the quality of patient care, and can also help decrease variability in treatment.

Various models have been developed which demonstrate that guideline implementation can be influenced by multiple factors, such as patient and practitioner characteristics, guideline and environmental factors, and the social-political context [4,5]. Accordingly, strategies to facilitate guideline implementation can have different orientation, such as professional-oriented, financial, organizational, and regulatory interventions. Although conclusive evidence of the effectiveness of implementation strategies is lacking [6-9], it is recognized that passive strategies such as guideline dissemination by itself are ineffective, and more active strategies are needed to improve guideline adherence [10,11]. Preferably, active implementation strategies should aim to eliminate barriers that hinder professionals from adhering to a specific guideline [12]. Cabana et al. [13] have shown that barriers to adherence can be knowledge-related such as a lack of awareness or familiarity, or attitude-related such as a lack of agreement, outcome expectancy, self-efficacy, or motivation. External barriers such as patient factors, guideline factors, and environmental factors may also play a role. In order to enhance implementation, perceived barriers should be analyzed for specific guideline recommendations, target group, and setting [14]. Subsequently, implementation interventions should be developed that are tailored to professionals' needs to overcome the perceived barriers [14,15].

Although these tailored interventions seem promising, in practice the choice of an intervention is often not based on the identified barriers of the professionals but on researchers' and implementers' preferences or familiarity with specific interventions [16,17]. To avoid a mismatch between identified barriers and interventions, the target users of the guidelines should be actively involved in selecting the interventions that will overcome the barriers they encounter in practice. The successful removal of barriers through tailor-made interventions remains a black box phenomenon [16].

Evidence-based guidelines for occupational health professionals on the management of mental health problems (MHP) have been developed in various countries [18], however implementation into practice is challenging. Currently, MHP are among the leading causes of (work) disability worldwide [19], and can negatively impact work capacity and lead to sick leave and long-lasting work disability [20]. To address work disability due to MHP, The Netherlands Society of

Occupational Medicine (NVAB) developed a practice guideline entitled 'The management of mental health problems of workers by occupational physicians (OPs)' in 2000 and revised it in 2007 [21,22]. In the Netherlands, the OP plays an important role in the return to work process of sick listed workers by assessing the worker's work ability, giving advice about return to work and proving occupational health care. The NVAB guideline on mental health problems, referred to hereafter as 'the MHP guideline', promotes an activating approach by the OP aimed to establish earlier return to work and lower recurrence rates of workers on sick leave due to MHP (see Table 1). The guideline was distributed among Dutch OPs, and became part of their continuing medical education (nationally and locally) which enabled OPs to increase their knowledge of the guideline content. Subsequent research has shown that closer adherence to the guideline was associated with shortened sick leave duration in workers with adjustment disorders [23,24]. Although Dutch OPs had a positive attitude toward the guideline and intended to use it, actual compliance with the recommendations was limited [23,25].

Table 1 Background information about the content of the 'Mental Health Problems' guideline **[22]**

1) Problem Orientation and Diagnosis	An early involvement of the OP is promoted (first consultation about 2 weeks after the worker reports sick). A simplified classification of MHP is introduced in four categories: i) Stress-related complaints, ii) depression, iii) anxiety disorder, and iv) other psychiatric disorders. Furthermore, problem inventory should focus on factors related to the worker, his or her work environment, and the interaction between these two.
2) Intervention/ Treatment	The OP acts as the case manager by monitoring and evaluating the process of recovery (process-based evaluation). If the recovery process stagnates, the OP should intervene by acting as the care manager by using cognitive behavioral techniques to enhance the problem-solving capacity of the worker, providing the worker and work environment with information/advice on the recovery and the RTW process, contacting the general practitioner if problems remain the same or increase, and referring the worker to a specialized intervention if necessary. In addition, the OP should advise the work environment (e.g., supervisors, managers, and human resource managers) on how to support the worker and enhance the recovery and RTW process.
3) Relapse Prevention	The integration of relapse prevention from the first contact with the worker is achieved by enhancing the problem-solving capacity of the worker.
4) Evaluation	During follow-up meetings, evaluation of the recovery process includes the perspectives of the worker, supervisor, and other involved professionals. Follow-up meetings with the worker should take place every 3 weeks during the first 3 months, and then every 6 weeks thereafter. The supervisor or work environment should be contacted once a month. Follow-up contacts with the general practitioner or other professionals should take place if the recovery process stagnates or if there is doubt about the diagnosis or treatment.

OP = occupational physician; MHP = mental health problems; RTW = return-to-work.

To improve adherence to the Dutch MHP guideline, we developed an implementation strategy to specifically target knowledge, attitude, and perceived external barriers, and to find solutions to overcome these barriers. OPs were actively involved in the identification of barriers and the implementation of solutions through the use of a Plan-Do-Check-Act (PDCA) approach in small-group interactive training meetings [26,27]. The objective of this article is to describe how this tailored implementation strategy for the MHP guideline was carried out, and to discuss how the strategy was received among the OPs. The following research questions were addressed:

1. How feasible is the tailored implementation strategy for the 'Mental Health Problems' guideline? Is the strategy carried out as planned, and what are the experiences of the target users of the guideline (i.e., the occupational physicians)?
2. What is the impact of the implementation strategy on occupational physicians' knowledge, attitude, and perceived external barriers with regard to the guideline?

Methods

Implementation strategy

Based on scientific literature on the effectiveness of implementation strategies [11,15,28], we developed a (tailored) guideline training protocol that focused on barriers that hindered OPs from using the guideline, and developed solutions to overcome these barriers. Although, several more recent implementation models have been developed [4,5], we chose to use Cabana's model [13] because it is a generic model, which is well-suited to guide barriers analyses and is still being used in various health care settings [12,29,30]. In addition, it takes into account the different stages of implementation. For example, knowledge-related barriers may be most relevant at the beginning of the implementation process; later on insight can be gained into perceived attitude-related and external barriers. In the guideline training the evolution of barriers over time can be taken into account. According to Cabana's model, guideline adherence can be affected by three main categories of barriers: 1) knowledge-related barriers (lack of awareness/familiarity), 2) attitude-related barriers (lack of agreement, self-efficacy, outcome expectancy, and motivation), and 3) external barriers that hinder physicians from applying the guideline in practice (guideline, environmental, and patient related factors) (see Table 2).

Table 2 Possible barriers to adhering to guideline recommendations in practice based on the Cabana et al. model **[13]***

Knowledge-related barriers	
Lack of awareness/familiarity:	OPs may be unaware of the (exact) content of the guideline recommendation
Attitude-related barriers	
Lack of agreement:	OPs may disagree with the guideline recommendation due to a perceived lack or inadequate interpretation of evidence or due to a lack of applicability of the recommendations in general and more specifically to individual patients
Lack of self-efficacy:	OPs may believe that they cannot perform the guideline recommendation because they lack appropriate training or experience
Lack of outcome expectancy:	OPs may believe that even if they can perform the recommendation it will not affect patient outcomes
Inertia of previous practice/ lack of motivation:	OPs may not follow recommendations because of the difficulties of changing habits or old routines, or a lack of motivation
External barriers	
Patient factors:	OPs may be unable to reconcile patient preferences and demands with the guideline recommendations, or they may believe that patients are unable to perform the necessary actions
Guideline recommendation factors:	OPs may believe that the guideline recommendations are unclear or ambiguous, incomplete, or too complex
Environmental factors:	OPs may be unable to overcome barriers in their practice environments, such as a lack of time (time pressure), a lack of resources/materials, a lack of reimbursement, and organizational constraints within their own practice, in other organizations (e.g., out-of-hours services and pharmacies), or between organizations (e.g., cooperation and arrangements with medical specialists and GPs)

* Adapted version from Lugtenberg et al. [31]; OP = occupational physician.

To explore the perceived barriers of OPs, and to find suitable solutions to overcome these barriers, we used a 'Plan-Do-Check-Act' cycle. The PDCA cycle follows a learning approach to adopt changes aimed at improvement. It also provides flexibility to adapt the changes according to feedback, which helps to ensure that fit-to-purpose solutions are developed [27]. As a pragmatic scientific method, the PDCA cycle can be used in complex systems as a small-scale, iterative approach to implement, test, and improve interventions.

The focus on perceived barriers (i.e. the Cabana model) in combination with a PDCA approach formed the basis of the training on the guideline 'MHP' (see Table 3).

Table 3 Intended structure of the guideline training 'Mental Health Problems'

Structure (Plan-Do-Check-Act)	***Explanation***
Stepwise discussion of the guideline content (Plan1)	In each meeting, the recommendations of part of the guideline are discussed
Barrier analysis: knowledge, attitude, and external barriers (Plan2)	Identify individual and group barriers that hinder OPs from using the guideline by discussing guideline recommendations (a different part of the guideline in each meeting)
Discussion of possible solutions for specific barriers (Plan3)	OPs discuss how specific barriers can be overcome by suggesting solutions to apply in practice
Action plan (Plan4)	OPs draw up an action plan of how to implement these solutions in their daily practice, and agree on learning objectives and 'homework' assignments
Practice of suggested solutions (Do)	OPs test the suggested solutions to experience how and if these would help in applying the guideline recommendation
Evaluation of experiences (Check)	OPs' experiences with the suggested solutions are evaluated to decide what did work and what did not work for performing the guideline recommendation
Adjustment of solutions if necessary (Act)	If necessary, the solutions are adjusted according to what OPs experience in practice

OP = occupational physician.

Protocol of the training on the 'Mental Health Problems' guideline

The protocol of the guideline training 'MHP' is described in Table 4. The guideline training consisted of eight meetings of 2 hours each spread out over a 1-year period. Small interactive groups of four to six OPs were utilized to stimulate involvement and in-depth discussion about perceived barriers and potential effective solutions. Through this peer-group learning approach, OPs interacted with other OPs and learned from each others' experiences, knowledge, and skills to attain a common goal (i.e., make optimal use of the MHP guideline) [31]. A trainer (MJ) guided the groups by structuring the meetings, facilitating the discussion, and monitoring the progress of the groups and their training. On request, the trainer also provided course materials and tools that could help OPs overcome specific barriers.

Table 4 Protocol of the guideline training

Goals of the meetings	PDCA	Intended approach to achieve the goals
Meeting 1: Introduction of group members, guideline training, and the guideline	n/a	1. Introductory game to get to know peers and the trainer
	n/a	2. Discuss the aim and structure of the guideline training, and explain the rules of the training (confidential setting, respecting each others' opinions, constructive feedback, role of the trainer, and role of peers)
	n/a	3. Discuss OPs' expectations of the guideline training
	n/a	4. Briefly discuss guideline content, its weaknesses, and its strengths
Meeting 2: Discuss the 'Preconditions' of the guideline and recommendations of chapter 1 'Problem orientation'; identify related barriers, discuss specific solutions, and draw up an action plan	n/a	1. Evaluate the previous meeting: OPs' experiences
	n/a	2. Trainer explains the framework of Cabana et al. [13]
	P1-2	3. Discuss 'Preconditions' to using the guideline: the trainer asks OPs about their knowledge, attitude, and use of the guideline in practice, as well as the reasons for not using it and what would help them use it in practice
	P2-3	4. Group assignment on 'Problem orientation': discuss in pairs the questions to be asked to inventory patients' problems; group discussion and check agreement with guideline recommendation; discuss what would facilitate or hinder using this recommendation; and discuss what would help facilitate use in practice
	P4 D	5. Action plan: group discussion on what the most important barriers and feasible solutions are; formulate collective learning objectives, strategies, and homework assignments
Meeting 3: Discuss guideline recommendations of chapter 1 'Diagnosis'; identify related barriers, discuss specific solutions, and draw up an action plan	C, A	1. Evaluate action plan: were solutions tested? What were the implementation facilitators and barriers? Discuss new solutions for barriers
	P1	2. Trainer explains key recommendations related to 'Diagnosis'
	P2-3	3. Case discussion: one OP introduces a case, and other OPs ask questions and set diagnosis, check agreement with guideline recommendation, and discuss facilitators and barriers for use in practice

	P4, D	4. Action plan: group discussion on what the most important barriers and feasible solutions are; formulate collective learning objectives, strategies, and homework assignments
Meeting 4: Barrier analysis, and discuss solutions for guideline recommendations of chapter 2 'Interventions focusing on patients' and 'Process-based approach'	C, A	1. Evaluate action plan: were solutions tested? What were the implementation facilitators and barriers? Discuss new solutions for barriers
	P1	2. Trainer explains key recommendations related to 'Interventions focusing on patients' and 'Process-based approach'
	P2-3	3. Case discussion: discuss possible interventions for a case, practice interventions using the case description, and check agreement with the guideline recommendations
	P4, D	4. Action plan: group discussion on what the most important barriers and feasible solutions are; formulate collective learning objectives, strategies, and homework assignments
Meeting 5: Barrier analysis, and discuss solutions for guideline recommendations of chapter 2 'Interventions focusing on work environment'	C, A	1. Evaluate action plan: were solutions tested? What were the implementation facilitators and barriers? Discuss new solutions for barriers
	P1	2. Trainer explains key recommendations related to 'Interventions focusing on work environment'
	P2-3	3. Intervention tools: discussion of tools associated with the guideline; discuss knowledge, attitude, and use of the guideline in practice, as well as the reasons for not using it and what would help with use in practice
	P4, D	4. Action plan: group discussion on what the most important barriers and feasible solutions are; formulate collective learning objectives, strategies, and homework assignments
Meeting 6: Barrier analysis, and discuss solutions for guideline recommendations of chapters 3 and 4 'Relapse prevention, evaluation, and closure'	C, A	1. Evaluate action plan: were solutions tested? What were the implementation facilitators and barriers? Discuss new solutions for barriers
	P1	2. Trainer explains key recommendations related to 'Relapse prevention, evaluation, and closure'
	P2-3	3. Case evaluation: OPs check each others' cases, give feedback, and discuss agreement with guideline content
	P4, D	4. Action plan: group discussion on what the most important barriers and feasible solutions are; formulate collective learning objectives, strategies, and homework assignments

Meeting 7: Barrier analysis, and discuss solutions for guideline element 'Process-based approach'	C, A	1. Evaluate action plan: were solutions tested? What were the implementation facilitators and barriers? Discuss new solutions for barriers
	P1-3	2. Training topics and methods adjusted to the needs of the group
	P4, D	3. Action plan: group discussion on what the most important barriers and feasible solutions are; formulate collective learning objectives, strategies, and homework assignments
Meeting 8: (Process) evaluation of the meetings	C	1. Evaluate action plan: were solutions tested? What were the implementation facilitators and barriers?
	C	2. Evaluate guideline training: OPs' experiences of guideline training and assurance of what has been learned

Goals of the meetings, related elements of the Plan-Do-Check-Act cycle and intended approach to achieve the goals.
OP = occupational physician; P = Plan; D = Do; C= Check; A = Act; n/a = not applicable

The training had a PDCA structure in which the content of the MHP guideline was discussed step-by-step following the chapters of the guideline (see Table 3). In the first meeting the trainer introduced herself and the participants, explained her role, and emphasized her independence towards the guideline. After providing information about the structure of the training and the role of the participants within the confidential setting the formal training started with an introduction to the guideline and general experiences with the guideline. In each subsequent meeting the PDCA structure was used; the trainer began by introducing a guideline recommendation (Plan 1 stage) and asking the OPs to discuss what hindered them from using this specific guideline recommendation in practice (i.e., barrier analysis using the Cabana model) (Plan 2 stage). Then the OPs discussed what was needed to address the perceived barriers, taking into account the context of their daily practice (Plan 3 stage). Finally, the OPs drew up a joint action plan of how to implement these solutions (Plan 4 stage). In between the meetings, the OPs tested the solutions to experience how and if these would help in applying the guideline recommendation (Do stage). In the next meeting, OPs discussed their experiences (Check stage), and, if necessary, the solutions were adjusted (Act stage); this was followed by a new plan, do, check and act stage. This PDCA cycle was repeated in subsequent meetings for all the guideline recommendations.

Participants

The guideline training 'MHP' was developed as part of a larger randomized controlled trail (RCT), which aimed to explore if sick leave duration due to common mental disorders can be reduced by improving occupational health care (Trial registration: ISRCTN86605310) [32]. For this trial, OPs who were employed at a large occupational health service (OHS) in the southern part of the Netherlands were invited to participate between October 2010 and January 2011. After giving their consent, OPs were randomized to the intervention or control group. The OPs in the intervention group received the guideline training 'MHP' which aims at guideline-based care. OPs in the control group did not receive additional training and performed care-as-usual. OPs participated on a voluntary basis and received educational credits after completing the training. For the purpose of this feasibility study, data from the intervention group (the OPs whom received the guideline training 'MHP') were used. The results on the effectiveness of guideline-based care on workers' return to work compared to care-as-usual will be described elsewhere. The research protocol of the larger RCT has been published by van Beurden and colleagues [32]. Approval was obtained from the Medical Research Ethics Committee of St. Elisabeth Hospital in Tilburg.

Procedure and measures

To explore if the guideline training was conducted as planned, we evaluated how the training protocol (including the PDCA approach) (see Tables 3 and 4) was carried out during the training

meetings. All training meetings were audio taped with the OPs' consent, transcribed verbatim, and analyzed. Additional documents (e.g., action plan documents and the trainer's logbook) were used to gain insight into how the training was conducted.

To enable the exploration of OPs' experiences, the OPs answered two open-ended questions during the final training meeting on what they had learned during the training year, and were asked if they had any suggestions for improving the training. In addition, OPs rated the perceived effect of the training on their own guideline adherence on a 4-point scale ranging from 1 (no effect) to 4 (strong effect). The training components that were rated include: 'small learning groups', 'eight training meetings spread over one year', 'focus on barriers and solutions to apply in practice', 'Repetition of the course material', 'stepwise discussion of the guideline content', 'PDCA structure', 'training topics/methods are adjusted to the needs of the group'.

For the second research question of this study—that is, the assessment of the impact of the guideline training on perceived barriers—a questionnaire based on the model of Cabana et al. [13] was filled out before and after the guideline training [29]. This questionnaire assessed participants' knowledge, attitude, and external barriers (Table 2) by means of statements. One statement concerned the self-reported extent to which OPs adhered to the guideline (perceived adherence). A 5-point Likert scale was used to rate the extent of agreement with the statements, which ranged from 1 (strongly disagree) to 5 (strongly agree). Actual knowledge of the guideline content was assessed by a knowledge test containing 15 statements (response categories: right/wrong/don't know) that represented the key recommendations of the guideline. One open-ended knowledge question was included to summarize the essence of the guideline. The essence of the guideline included 1) evaluation of the recovery process of the worker, 2) activating approach used by the OP, 3) identification of stagnation of the recovery process, and 4) OP acts as a process facilitator. Scoring criteria were developed based on the four essential elements of the guideline; two researchers (MJ and JvdK) independently formulated criteria, discussed disagreements, pilot tested the scoring criteria, and agreed on the final scoring criteria. Two researchers independently scored the answers on a 4-point scale ranging from 0 (very poor knowledge) to 3 (excellent knowledge).

Participants' characteristics, such as age, education, and years of work experience, were gathered via a questionnaire at the start of the training, and were descriptively analyzed upon completion of the program. Data on the attendance of the meetings were collected during the training period.

Data analysis

To evaluate if the guideline training was conducted as planned, the transcripts of the training meetings were briefly reviewed to get an initial impression of how the guideline training was

conducted and how the PDCA approach had been utilized. Then, a detailed analysis was conducted and text fragments illustrating the PDCA were coded and bundled as Plan, Do, Check, or Act stage. Subsequently, multiple PDCA cycles were identified and coded to illustrate how lessons from one cycle were linked to the following cycle. Finally, the content of the text fragments was compared to the content of the 'Action Plan' documents in which OPs drew up their goals and suggested solutions (Plan phase) for each meeting [33]. The software program MaxQDA 11.0 was used for the above analyses, and results were further analyzed descriptively.

Self-reported information from the open-ended questions regarding OPs' experiences was explored and similar concepts were grouped together. The number of categories was reduced and text fragments were bundled. For perceived effectiveness, the frequencies and percentages of responses to the statements (which training components were highly effective on guideline adherence) were examined.

For the second research question, descriptive statistics were used to designate knowledge, attitudes, and external barriers. We recoded the scores 1 and 2 (strongly/somewhat disagree) indicating disagreement, the score 3 indicating a neutral attitude, and the scores 4 and 5 (agree/strongly agree) indicating agreement. To assess actual knowledge of the guideline content, the percentage of correctly answered questions before and after the training were compared. The scores on the open-ended knowledge question were dichotomized with the scores 0 and 1 indicating insufficient knowledge of the essence of the guideline, and the scores 2 and 3 indicating sufficient knowledge. To test differences before and after the guideline training on knowledge, attitude, and perceived external barriers, we performed nonparametric tests for paired samples.

Results

Participants

From 155 eligible OPs, 66 participated in the larger study: 34 OPs were randomized into the control group and 32 received the guideline training. Of the remainder, 46 OPs did not respond and 43 OPs chose not to participate, of which 34 (79%) were male and the mean age was 54 years (SD = 7.1; age was based on n = 29). The main reasons for nonparticipation were lack of time (n = 18), and upcoming retirement or resignation (n = 10).

The 32 OPs who received the guideline training were divided into six groups based on their geographical work location. Groups consisted of four, five, or six OPs. One OP decided not to participate before the training started due to time constraints. Of the remaining 31 OPs, the mean age was 53 years (SD = 4.3) and 17 (55%) were male. On average, the OPs had 21 years (SD

= 7.1) of experience working as an OP and were working 33 hours a week (SD = 5.6); 28 OPs (90%) had previously been educated in the MHP guideline through continuing medical education.

In consultation with the OPs, the eight meetings were scheduled over the course of a year with 3 to 6 weeks between the meetings. All OPs attended eight meetings. On six occasions an OP was not able to attend a meeting of their own group and joined another group for that particular training meeting. The duration of the meetings ranged between 112 and 157 minutes.

Feasibility of the guideline training in practice

Overall, the training protocol was carried out as planned. During the training period, iterative PDCA cycles were conducted across different topics related to the guideline recommendations in all six groups. The PDCA provided a continuous process from exploring the rationale of a guideline recommendation, to finding and testing solutions, discovering new barriers, and finding better solutions to adhere to the recommendation. The process started with a discussion of a guideline recommendation in the second training meeting. Facilitated by the trainer, the group members engaged in a discussion about the meaning, usefulness, and reasons for using or not using the recommendation in practice. This process also helped group members identify barriers related to knowledge and attitude as well as external barriers (Plan stage). As knowledge and understanding of the guideline recommendations was often lacking, the trainer disseminated information to the group and facilitated peer discussion about the rationale of the specific recommendation. Through this process, OPs overcame important knowledge barriers in the Plan stage, leading to more in-depth discussion about attitude-related and external barriers. Also in the Plan stage, practical solutions for barriers were discussed and OPs agreed on learning goals and defined action plans to achieve the goals. In each meeting, these commonly formulated goals and 'homework assignments' were summarized in an 'Action Plan' document which the trainer sent to the OPs in the group. Not all OPs managed to test the suggested solutions between the meetings (Do stage). The reasons for not testing solutions, which included lack of time or resources and lack of motivation or confidence, were discussed in the next meeting (Check stage). Also, positive experiences with solutions were shared and discussed with the group members. During these discussions, OPs identified new barriers and suggested new solutions or adjustments to improve adherence to the guideline recommendation (Act stage). Therefore, the Plan stage of the next PDCA cycle started at this point, profiting from the experience from the previous cycle (i.e., the Act and Plan stages merged). To illustrate how OPs were engaged in the implementation of a specific guideline recommendation an example is presented in Additional file 1.

The trainer provided structure for the meetings and facilitated discussion by creating a confidential setting, giving constructive feedback to OPs, and respecting all opinions. This resulted in in-depth discussion on the topics that the OPs themselves found relevant for their

context. The trainer also provided information between groups, such as educational materials, tools, and tips on suggested solutions. Moreover, the trainer stimulated co-creation of practical tools by transferring information from one group to another.

Occupational physicians' opinions of and experiences with the guideline training

Perceived effectiveness of training elements

Of 31 OPs, 28 (90%) perceived that 'small groups' and 'eight training meetings spread over one year' strongly contributed to higher guideline adherence. 'Repetition of the course material' and the 'focus on barriers and solutions to apply in practice' were second and third most mentioned (84% and 73% respectively). More than half of the OPs perceived 'stepwise discussion of the guideline content' (61%) and the 'PDCA structure' (52%) as strongly effective for guideline adherence. Least mentioned was 'training topics/methods are adjusted to the needs of the group' (29%).

OPs' experiences

In the self-reported data from the open-ended questionnaire, OPs indicated that implementation of a guideline was an intensive process which takes more than dissemination of the (content of the) guideline alone. According to OPs, the PDCA helped them change their behavior and adopt a new working routine. OPs were also aware that it would take effort to integrate the guideline fully in their work practice. OPs mentioned that the peer-group learning approach was of added value for recognizing, for example, that their peers face the same problems and difficulties, for discussing and comparing examples and cases, for learning from each other, and for sharing practical tools.

Most OPs mentioned that their knowledge of the content, recommendations, and rationale of the guideline had increased through their attendance of the guideline training. In addition, OPs had learned how to work according to a shared structure and improve their reporting in patients' medical records. OPs indicated that they were more aware of their own actions and limitations, and the role they played in guiding patients with MHP. OPs also mentioned that they enjoyed working with patients with MHP and felt empowered to cooperate with other caregivers. Finally, OPs found that some external factors, especially time constraints, were persistent barriers to adherence to the guideline. Consultation time with the patient was too short and a heavy work load made it difficult to put suggested solutions into practice and discuss problems or topics with their peers.

Suggested improvements

When asked for suggestions to improve the training, OPs indicated that follow-up meetings should be included after the 1-year training period to maintain the results achieved (n = 7). One group continued the meetings (without the trainer) quarterly to discuss guideline topics, give

feedback to case reports, and share good practices. Other suggested improvements were related to the planning of the training meetings (i.e., leave more time between the meetings to test solutions/do homework [n = 4]), and to the facilities of the training (i.e., improve catering during the meetings [n = 3]). In addition, OPs suggested discussing more individual case reports (n = 3) and developing and sharing more practical tools with their peers (n = 5). Furthermore, four OPs suggested continuing this training concept for other OPs and for guidelines on other topics. Eleven OPs indicated that they had no suggestions for improvement.

Impact on knowledge, attitude, and perceived external barriers

Table 5 presents the percentage of OPs who mentioned specific barriers related to the guideline recommendations before and after the training. Before the training, 16.1% and 35.5% of the OPs perceived barriers related to knowledge and self-efficacy respectively; afterward, none of the OPs perceived these barriers ($p = .03$ and $p < .01$ respectively). Inertia of previous practice/lack of motivation decreased from 51.6% to 25.8% after the training ($p = .04$), and lack of outcome expectancy was not perceived as a barrier before or after the training. External barriers related to patient ability and behavior (from 54.8% to 33.3%) and OPs' lack of time (from 46.7% to 48.4%) remained prevalent after the training. Self-reported guideline adherence rose from 48.8% to 96.8% ($p < .01$) after the training.

Table 5 Impact on knowledge, attitude and perceived external barriers

	t0		t1		p-value[a]
	N	freq (%)	N	freq (%)	
Knowledge-related barriers					
Lack of awareness/familiarity	31	5 (16.1%)	31	0 (0%)	.03
Attitude-related barriers					
Lack of agreement					
Lack of evidence	31	2 (6.5%)	31	0 (0%)	.16
Lack of applicability in general	31	15 (48.4%)	31	8 (25.8%)	.09
Lack of applicability to individual patients	31	14 (45.2%)	31	5 (16.1%)	.01
Lack of self-efficacy	31	11 (35.5%)	31	0 (0%)	<.01
Lack of outcome expectancy	31	0 (0%)	31	0 (0%)	1
Inertia of previous practice/lack of motivation	31	16 (51.6%)	31	8 (25.8%)	.04
External barriers					
Patient factors					
Patient preferences/demands	31	6 (19.4%)	29	1 (3.4%)	.22
Patient ability and behavior	31	17 (54.8%)	30	10 (33.3%)	.09
Guideline factors					
Guideline recommendation factors	31	5 (16.1%)	31	2 (6.5%)	.38
Environmental factors					
Time pressure/lack of time	30	14 (46.7%)	31	15 (48.4%)	1
Lack of resources/materials	29	3 (10.3%)	30	2 (6.7%)	.63
Organizational constraints	31	10 (32.3%)	31	3 (9.7%)	.07
Lack of reimbursement	31	7 (22.6%)	29	3 (10.3%)	.29

Mean percentage of occupational physicians who agree with the perceived barriers in adhering to the guideline 'Mental Health Problems' before (t0) and after (t1) the guideline training.

[a] McNemar test for paired samples.

Actual knowledge examined by the knowledge test showed that before the training 9.7% of the OPs had correctly answered 75% (or more) of the questions, versus 61.3% afterward ($p < .01$). Knowledge of the essence of the guideline increased nonsignificantly from 35.5% to 48.8% of the OPs ($p = .39$).

Discussion

The results of this study suggest that the training in the MHP guideline is a feasible and useful implementation strategy for OPs. The strategy was carried out as planned: perceived barriers related to knowledge, attitude, and external factors that hinder OPs from using the guideline were identified and tailored interventions to overcome these barriers were implemented. Several PDCA cycles were conducted and lessons from one cycle were linked to the following cycle (i.e., adjustments to the interventions were made and tested again). In general,

participating OPs had positive experiences with the guideline training. OPs' knowledge of the guideline content increased during the training, and they also developed a more positive attitude towards the guideline. They were more aware of their own working patterns and points of attention and recognized that focusing on barriers and solutions could help them change their behavior and adopt a new working style. In addition, OPs perceived that the small peer-group learning approach and the repetition of the guideline content with meetings spread over a 1-year period contributed the most to a higher perceived guideline adherence. After the guideline training OPs perceived no knowledge barriers and were more confident and motivated to work according to the guideline than they were before the training. They still perceived time constraints in adhering optimally to the guideline.

Based on our results, a peer-group learning training with focus on perceived barriers using a PDCA structure seems to be a feasible and powerful approach to conduct a tailored implementation strategy because the target users themselves develop the solutions to overcome perceived barriers. In addition, the peer-group learning approach was highly appreciated by the OPs, as this not only created a sense of openness, it also inspired and empowered them. It gave OPs the opportunity to work together on the same goal. Enhancing the exchange of knowledge through the actively involved physicians, covering relevant clinical topics, and facilitating the acquisition of knowledge and competence simultaneously are valued elements of peer-group learning [34]. Previous studies have shown that peer-group learning activates the preknowledge of participants, leads to high-quality learning groups, and can impart sustainable knowledge and performance change [34,35]. Learning from peers in small group interactive education sessions to improve guideline adherence was also found to be highly valued by other practitioners, such as general physicians [36].

The adoption of the model of Cabana et al. [13] as a framework proved useful in understanding the barriers to implementation. In previous studies using tailored interventions, researchers mostly failed to develop and test interventions to overcome barriers perceived by physicians [16,37]. The use of the model of Cabana et al. [13] and the PDCA approach allowed the interventions to be developed by the physicians themselves, but also allowed them to test the interventions in practice and discover new barriers of which they had not been aware. Therefore, the focus on perceived barriers among the target group in combination with the PDCA approach seems to be a promising strategy to overcome identified barriers with tailor-made implementation interventions. As the strategy has a formal training structure existing of 8 sessions and can be easily adapted to another context, it is also suitable for continuing medical education purposes.

When comparing actual knowledge with perceived knowledge of the guideline, discrepancies were found that suggest that OPs overestimated their knowledge of the guideline. Before the

training, only five OPs perceived lack of knowledge. But as was shown by the knowledge test, more than 90% of OPs did not correctly answer three quarters (75%) of the knowledge questions. In addition, during the training a lack of understanding of the recommendations was one of the primary barriers keeping OPs from using the guideline correctly. This suggests that OPs either found it difficult to assess their own barriers correctly, or felt reluctant to reveal their limitations (e.g., lack of knowledge) before the training started [38]. This finding confirms that it is important for barrier analyses to be performed on the level of specific recommendations [14,16]. Actual knowledge, measured with yes/no statements reflecting guideline recommendation, improved significantly after the training. But we found no improvement in knowledge of the essence of the guideline. As the guideline training mainly focused on OP's understanding specific guideline recommendations, we expected most improvements to be found on the level of recommendations.

Time constraints remained the most prevalent perceived barrier after the training period. This was shown in the results from the questionnaire (before–after), it was also reported in the open-ended questions, and it was a recurrent topic during the training meetings. In addition, other external barriers, such as patient ability and organizational constraints did not decrease much after the training. External constraints might be too extensive and complex to be changed by a professional-directed intervention as our implementation strategy. Especially in the occupational health care setting, where the OP has to deal with national legislation, their own organization (OHS), the worker's work environment, health care providers, care givers, and the interaction between these stakeholders. Some external constraints might be overcome by, for example empowering professionals to change their behavior and influence their environment. However, to overcome external constraints, interventions that focus directly on the organization, such as feedback systems or computerized decision aids, may be needed, and should also involve all relevant stakeholders who are committed to implementing the interventions [39-41].

Research on tailored implementation strategies specifically for occupational mental health care is scarce. A multifaceted intervention for the Dutch depression guideline for insurance physicians was found to be effective in a controlled setting [42]. In primary care, a tailored implementation strategy to improve management of anxiety and depressive disorder was found useful and may enhance guideline implementation [43]. However, conclusive evidence about the effectiveness of tailored implementation strategies is lacking, mostly because it could not be determined whether relevant barriers were identified and if they had been addressed by fit-to-purpose interventions [44]. Baker and colleagues [44] concluded that more research, such as process evaluations, is needed on how to identify and overcome barriers. Our study suggests that it is possible to identify barriers and intervene through an intensive peer-group training protocol with tailor-made interventions.

Based on this study, some adjustments to the implementation strategy could be considered. To maximize the continuity of the achieved changes, models of change [45] advise constant reminders of the desired behavior. Therefore, in future research we recommend follow-up meetings as the OPs suggested. In addition, other moderating components may influence the degree to which the guideline training was implemented, such as the (facilitating) role of the trainer [46,47]. Facilitators play an important role in assisting individuals and teams with identifying what needs to be changed and how to make these changes [48,49]. Not only should the trainer structure the meetings, facilitate the discussion, and share tools, but they should also be knowledgeable of the guideline content, communicate with participants, and build relationships between group members. As the trainer might be able to influence how well the learning groups work, we recommend selecting the trainer carefully. The role of the training should be taken into consideration when evaluating the intervention.

A strength of this study is that we used a theory-based approach and were able to implement interventions that were tailored to individual barriers to guideline compliance. In this way, OPs were able to explore what their individual needs were, find suitable solutions, and test the effectiveness of these solutions in daily practice. In addition, we used a generic method to implement a specific guideline within a specific target group. It is therefore expected that our implementation strategy is suitable for transferring to a wider range of guidelines and professionals. More research is needed to test if the current strategy is feasible and useful in different settings.

Some limitations of this study need to be mentioned. First, all OPs participated on a voluntary basis and were highly motivated to learn, which may explain their positive attitude towards the guideline training. OPs with a positive attitude towards the MHP guideline may be overrepresented in our study. This limitation is inevitable in studies addressing change in professional behavior, as willingness to change (or at least willingness to explore change) is a prerequisite to participate. In addition, interventions that ask for active participation of health professionals generally require a high degree of motivation [50,51]. Second, a bias toward social desirability may have influenced the answers concerning perceived barriers and satisfaction with the training. Third, only a small number of OPs were included in our study. Although our sample of OPs is representative of the total population of Dutch OPs in terms of basic characteristics [52], female OPs were slightly overrepresented. Also, all OPs were employed by the same occupational health service that gave participating OPs the opportunity to follow the 16-hours training. In addition, one trainer performed all of the training. These limitations indicate the need for care when generalizing the results and replicating the implementation strategy.

To improve guideline adherence, addressing perceived barriers among the target group is often considered to be a first important step [11]. After demonstrating that OPs perceived less barriers

to use the MHP guideline by following the guideline training, the next step would be to examine its effect on actual guideline use objectively. Also future research should focus on the (cost) effectiveness of guideline use on clinical outcomes and, in the case of the MHP guideline, on work participation outcomes.

Conclusion

The results of this study imply that the tailored implementation strategy for OPs contributes to the knowledge, attitude, and skills of OPs in using the MHP guideline. The focus on perceived barriers in combination with a PDCA approach seems to be a feasible strategy to translate identified barriers into a tailor-made implementation intervention, and could be a promising approach to enhance guideline adherence. It is expected that this implementation strategy is suitable for a wider range of guidelines and professionals, as it is a generic approach to overcome barriers that care professionals themselves perceive in a specific situation.

Additional_file_1 as PDF

Additional file 1 Example of the implementation of a guideline recommendation by OPs participating in the guideline training.

Competing interests

JvdK was the manager and main author in the development of the NVAB guideline and does not receive fees for the use of the guideline. MJ, EB, KvB, BT and JvW declare that they have no competing interests.

Authors' contributions

MJ carried out the data collection, data analysis and drafted the manuscript. MJ, EB, KvB, BT, JvdK, JvW contributed to the design, interpretation of the data, draft of the article and its revision. All authors read and approved the final manuscript.

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Chapter 4

Occupational physicians' perceived barriers and suggested solutions to improve adherence to a guideline on mental health problems: analysis of a peer group training

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Abstract

Background

Despite the impact of mental health problems on sickness absence, only few occupational health guidelines addressing these problems are available. Moreover, adherence has found to be suboptimal. To improve adherence to the Dutch guideline on mental health problems a training was developed for Dutch occupational physicians (OPs) focusing on identifying barriers and addressing them. The aim of this study was to provide an overview of the barriers that OPs perceived in adhering to the Dutch guideline on mental health problems as well as their solutions to overcome them.

Methods

A qualitative study was conducted using data from the peer group training. Thirty-two (6 groups of 4 to 6) OPs received a multiple-session interactive training over the course of a year, focusing on identifying and addressing barriers, using a Plan-Do-Check-Act approach. Sessions were audio-taped and transcribed verbatim. Thematic content analysis was performed by two researchers with a selection of 50% (21 out of 42) of the transcripts to identify the perceived barriers and the suggested solutions, using AtlasTi 7.0.

Results

Knowledge-related barriers were perceived regarding the content of all parts of the guideline. Commonly perceived attitude-related barriers were a lack of self-efficacy to perform certain guideline recommendations and difficulties with changing habits and routines. External barriers that were commonly perceived were work-contextual barriers, such as a lack of time/work pressure, tight contracts between occupational health services (OHSs) and employers, and conflicting policy of and a lack of collaboration with other parties (e.g. employer, other healthcare providers). The most often tested solutions by OPs during the training were sharing information, experiences, tips and tricks and referring to existing tools, or developing new tools to facilitate guideline usage.

Conclusions

Dutch OPs perceive a range of knowledge-related, attitude-related and external barriers in adhering to the guideline on mental health problems. The tested solutions during the training particularly seem to focus on knowledge and attitude-related barriers. To optimally implement this or similar mental health guidelines, it may be important to complement guideline training and education of individual or groups of OPs, with interventions that address external barriers such as changing tight contracts, or improving communication and collaboration with other parties.

Background

Mental health problems, such as depression or anxiety, are among the leading causes of work disability worldwide [1, 2]. It is estimated that at any one moment 20% of the working-age population is suffering from a mental disorder [3], which negatively impact work capacity and productivity [3-5] and may lead to sick leave and long-lasting work disability [6]. In the Netherlands, currently more workers are sick-listed due to mental health problems as compared to physical complaints [7]. Apart from the individual burden, associated economic and societal costs are substantial [8, 9].

Despite their major impact on sickness absence and associated individual and societal consequences, only few clinical practice guidelines addressing mental health problems as they relate to occupational health are available worldwide [10]. Among these guidelines is the Dutch guideline entitled 'The management of workers with common mental health problems by occupational physicians (OPs)' [11], which was developed in 2000 by The Netherlands Society of Occupational Physicians (NVAB, in Dutch) and revised in 2007 [12]. One of the central aspects of this guideline is for OPs to follow an activating approach aimed at establishing earlier return to work and lower recurrence of sickness among workers.

Whereas various activities have been performed to implement the guideline among the target group of Dutch OPs, research indicates that the OPs' adherence to the guideline's recommendations in practice is suboptimal [13-15]. OPs do, however, report a positive attitude towards the guideline in general and the intention to use it [13]. In addition, there is some evidence for a positive association between adherence to the guideline and a shortened sick leave duration for workers with adjustment disorders [14] and minor stress-related disorders [16], as well as for common mental health problems in general [15].

To improve guideline adherence, identification of the perceived barriers among the target group, is usually considered to be a first important step [17, 18]. As opposed to other healthcare settings, few barrier studies have been conducted among occupational health care professionals such as OPs [19]. It is generally recommended that barriers should be identified at different levels (e.g. the professional, the organization, the wider environment) [17, 18]. In addition, it may be useful to study barriers over time, as they may vary across different stages of implementation [20]. Results from the analysis of barriers can, subsequently, be used as input to develop tailored interventions [17, 18, 21]. Integrating the target groups' preferences for interventions or solutions may also be useful, as acceptance by the target group is crucial for successful implementation and behavior change [22].

As part of a randomized controlled trial (RCT), which aimed to explore how the management of sick-listed workers by OPs can be improved [23], a tailored implementation strategy was developed for OPs to improve their adherence to the guideline on mental health problems. OPs received a multiple-session interactive peer group training focusing on identifying and addressing barriers [24]. The training was perceived as a feasible and much appreciated method among participating OPs [24]. The current paper aims to provide an overview of the barriers that OPs perceived in adhering to the guideline on mental health problems in practice as well as of the solutions they came up with to address them.

Methods

Setting

In the Netherlands, approximately 2,000 OPs [25] assist employers and workers in occupational health issues, safety and sickness absence management by providing occupational health care to the working population [26]. The OP has a central role in the Dutch social security system, by providing advice to both employers and workers during the return to work process. If reported sick, Dutch workers are required to visit an OP for independent assessment and reintegration plan. Employers are obligated to hire OPs. Most Dutch employers have contracts with independently operating Organizational Health Services (OHSs). OPs employed at an OHS therefore often work for several companies at multiple locations.

Since 1998, the NVAB, has developed and implemented evidence-based practice guidelines for OPs for a variety of conditions and diseases [27]. One of these guidelines is 'The management of workers with common mental health problems by OPs', which was developed in 2000 [11] and revised in 2007 [12].

Description of the guideline on mental health problems

The guideline [11, 12] recommends OPs follow an activating approach in both case and care management. The content of the guideline is based on cognitive behavioral principles aiming to enhance the problem solving capacity of workers, particularly in relation to their work context [11, 12] and is expected to result in earlier return to work and lower recurrence of sickness among (sick-listed) workers. The guideline consists of four different parts, which can be considered as consecutive steps [11, 12], as described in Table 1. Besides the core guideline document, supporting documents are available for OPs such as guideline-related tools (i.e. the rumination exercise and metaphors [12].

Table 1: Summary of the guideline on mental health problems [12]

Part of the guideline	Content
1. Problem Orientation and Diagnosis	An early involvement of the OP in the sick leave process of the worker is promoted (first consultation about 2 weeks after the worker reports sick). A simplified classification of mental health problems is introduced in four categories: i) stress-related complaints, ii) depression, iii) anxiety disorder, and iv) other psychiatric disorders. Furthermore, problem inventory should focus on factors related to the worker, his or her work environment, and the interaction between these two.
2. Intervention/Treatment	The OP acts as case manager by monitoring and evaluating the process of recovery (process-based evaluation). When recovery stagnates, the OP should intervene by acting as care manager by using cognitive behavioral techniques to enhance the problem-solving capacity of the worker, providing the worker and work environment with information/advice on the recovery and the RTW process, contacting the general practitioner when problems remain or increase, and referring the worker to a specialized intervention when necessary. In addition, the OP should advise the work environment (e.g., supervisors, managers, and human resource managers) on how to support the worker and enhance the recovery and RTW process.
3. Relapse Prevention	The integration of relapse prevention from the first contact with the worker is achieved by enhancing the problem-solving capacity of the worker. The newly acquired problem solving skills are resumed in at least one specific relapse prevention meeting after RTW.
4. Evaluation	During follow-up meetings, evaluation of the recovery process includes the perspectives of the worker, supervisor, and other professionals involved. Follow-up meetings with the worker should take place every 3 weeks during the first 3 months, and every 6 weeks thereafter. The supervisor or work environment should be contacted once a month. Follow-up contacts with the general practitioner (GP) or other professionals should take place when the recovery process stagnates or when there is doubt about the diagnosis or treatment.

OPs: occupational physicians
RTW: return-to-work
GP: general practitioner

Study design

A qualitative study was conducted using data from a multiple-session small interactive peer group training for Dutch OPs. The training was part of a trial focusing on the reduction of sick leave duration due to common mental disorders among workers [23].

The training was developed for OPs as a tailored implementation strategy aimed at improving adherence to the guideline on mental health problems. The training used a Plan-Do-Check-Act (PDCA) approach, which provides a method for structuring change related to quality

improvement [28, 29]. Small-scale settings are usually promoted within this approach, as this enables rapid assessment and provides flexibility to adapt the change according to feedback, to ensure that fit-for-purpose solutions are developed [29]. Moreover, the multiple-session design of the training offers the opportunity to explore the evolution of perceived barriers among the target group over time. For instance, knowledge-related barriers may be most relevant at the beginning of the implementation process, whereas, once these have been removed, the existence of attitude-related and external barriers may come forward [24].

The way this tailored implementation strategy was carried out and received by OPs is described elsewhere [24]. The current paper provides an overview of the barriers that OPs perceived in adhering to the guideline on mental health problems in practice, as well as of their solutions to overcome them, as identified during the training sessions.

The RATS checklist [30], a checklist designed for reporting qualitative research, was used – whenever applicable - in this paper.

Participant selection

To select participants for the trial all OPs that were employed at a large OHS in the southern part of the Netherlands (N=approx. 155) were invited to participate. First, the researchers (MJ and EB) presented their research proposal of the trial [23] at several meetings for OPs at the OHS, after which OPs could register to participate. Subsequently, an invitation was sent by email to all OPs; a reminder email was sent after two weeks. Finally, all OPs who had not yet responded were invited by telephone by one of the researchers (MJ).

A total of 66 OPs agreed to participate and, after giving written consent, were randomized to either the intervention group (N=32) or the control group or (N=34). All 32 OPs from the intervention group were to receive the training. The 32 OPs were divided into six groups of 4-6 OPs, based on their work locations.

Content of the training

The training sessions were held at six regional offices of the OHS across the southern part of the Netherlands; each group attended the training at one location. The training consisted of eight two-hour-meetings which were scheduled over the course of a year.

The sessions were moderated by MJ (principal researcher of the study and experienced trainer of groups) and in 5 sessions EB (supervisor of the study) was also present. In the first meeting the trainer introduced herself, explained her role as a researcher and emphasized her independence

towards the guideline. After providing basic information about the training (structure of training, role of participants, confidential setting, anonymity in reporting) the formal training started.

The training was specifically developed for this study and was aimed at improving OPs' adherence to the guideline on mental health problems. A multiple-session training protocol was used [24]. The training followed the consecutive steps of the guideline, with each session focusing on a different topic. A PDCA approach was used to structure the discussions. In each session the perceived barriers in adhering to that specific topic were discussed. Next, OPs suggested solutions to address these barriers, taking into account the context of their daily practice. Subsequently, solutions were tested by the OPs in their daily practice. Finally, results were evaluated and, when necessary, solutions were adjusted. This PDCA cycle was repeated in each meeting and for all topics stated in the guideline. The trainer (MJ) guided the groups by structuring the meetings, facilitating the discussions and monitoring the progress [24]. All 48 sessions were audio-taped.

Data analysis and synthesis

Forty-two out of 48 sessions were transcribed verbatim. The first training session of each group (n=6) was not transcribed as this session was an introduction session and did not focus on specific barriers and interventions.

Because of the large amount of remaining material (6 groups x 7 sessions x 2 h = 84 hours) and the overlap in perceived barriers and tested solutions between groups, we chose to analyze the transcripts of 3 out of 6 (50%) groups for each session. Groups were chosen based on maximizing variation in perceived barriers and tested solutions. For each training session we started selecting the group that first attended this session, because of the possible spillover effect of the trainer with the subsequent groups of each session. The two other groups of each session were chosen based on summary reports of the training, which were assessed by the trainer in terms of adding variance in perceived barriers and solutions to address them. A total of 21 transcripts was selected.

Two researchers (ML and MJ) conducted both inductive and deductive thematic content analysis [31] using the software program Atlas.ti 7.0. ML and MJ studied the transcripts of the first group that attended a training session independently and created a code list of the identified barriers as well as of the interventions. Next, the code lists were compared and discrepancies were discussed until consensus was reached and one code list was created. Subsequently, one of the researchers (ML) coded the transcripts of the remaining two selected groups of each session, while a second coder (KvB, EB, JvW, JvdK), checked these transcripts using the agreed on code list.

To categorize the barriers we used the framework of Cabana et al. as a basis [19], and additional (sub) barriers were formulated if needed. In this framework, three main groups of barriers to follow guidelines are distinguished: knowledge-related barriers, attitude-related barriers and external barriers, which are each subdivided into several other barriers. To achieve adherence, all relevant barriers must be tackled. Whereas the framework of Cabana initially focused on guidelines as a whole, it has been recommended to analyze barriers at the level of the specific key recommendations [32, 33], as this is the concrete behavioral level. To categorize the solutions we used 'open coding' as the solutions were very specific and tailor-made and did not fit in existing models of interventions.

Next, the final code list was discussed by two researchers (ML and MJ) and emerging themes were grouped into a code tree and reflected upon. This process resulted in an overview of barriers to using the guideline on mental health problem as well as an overview of tested solutions.

Results

Description of participants

Of the 32 OPs who had agreed to participate in the training, one OP decided not to participate in the training after all, due to time constraints. The remaining 31 OPs attended all eight meetings. Six OPs were not able to attend a training session of their own group, but joined another group to attend that particular training meeting.

The mean age of the 31 participants was 53 years (SD=4.3) and 17 (55%) were male. On average, the OPs had 21 years (SD=7.1) of experience working as an OP and were working 33 hours a week (SD=5.6); 28 OPs (90%) had previously received education on the Dutch guideline through continuing medical education. Compared to the total population of Dutch OPs female OPs were slightly overrepresented [25].

Perceived barriers

Table 2 presents an overview of the barriers that were identified among OPs to using the guideline on mental health problems. They can, following Cabana [19], be divided into three main categories: 1. Knowledge-related barriers, 2. Attitude-related barriers, and 3. External barriers.

Knowledge-related barriers

OPs reported a lack of knowledge regarding the content of all four parts of the guideline and the availability of guideline-related tools (Table 2). For example, some OPs were not familiar with one of the central aspects of the guideline, i.e. that a stronger emphasis is put on evaluating the

process of recovery (a process-based evaluation) rather than on working time contingent. Others were not aware of the availability of guideline-related tools, such as the rumination exercise (i.e. an exercise to help control rumination or worrying). In addition, whereas some OPs believed they knew the guideline quite well, they discovered during the training that they did not really understand it after all.

Attitude-related barriers

Several attitude-related barriers were reported (Table 2). *Lack of agreement with guidelines in general* was mentioned as a barrier among OPs. Some OPs indicated that they felt that guidelines involve too much bureaucracy, and can therefore be rather cumbersome. They indicated to needing latitude not to work exclusively according to models and schemes. Also, a perceived *lack of agreement with this specific guideline* due to a lack of applicability was mentioned to be a barrier:

> *"I notice that I – I do want to apply the guideline, but not as strictly as it's formulated…I mean: you just cannot catch real-life cases in this single guideline. It's always different or more complicated or harder …".*

Another commonly perceived attitude-related barrier was *lack of self-efficacy*, i.e. not feeling capable of performing certain guideline recommendations due to a perceived lack of training or experience. OPs indicated, for example, that they did not know how to educate or provide information to the working environment of the workers and that they lacked tools to assist them in this:

> *"I am still not sure how to explain supervisors in like half an hour….I want to guide them and show them a better way to handle the situation".*

Lack of outcome expectancy was reported as a barrier by OPs. Some OPs indicated that, for example, they did not believe structural relapse prevention really makes a difference as they assumed that the organization will not take any further actions with regard to the advice they have provided:

> *"I work for a school and uh, the director deals very unprofessionally with his staff… At first, I talked to him about it and eh,… and eh, afterwards also to his supervisor, and he had a conversation with him but eventually did not take any further actions… So, it really doesn't make a difference! Eventually, you're very limited in what you can accomplish and you have to accept that".*

Inertia of previous practice was another commonly perceived attitude-related barrier. Some OPs reported to experience difficulties with changing habits and routines in order to learn new things, such as conducting a complete problem analysis and process diagnosis as described in the guideline:

> *"It just takes time and energy to change something you programmed yourself to do…. and when you work under pressure, you let go of it and you resume your old routine, just to be quick and efficient".*

External barriers

Three main types of external barriers were identified: worker factors, guideline factors and work-contextual barriers (Table 2).

Worker factors were reported as a barrier among OPs. Some OPs, for example, indicated that workers sometimes have hidden agendas aimed at a specific assessment outcome, which makes it difficult to make a correct diagnosis:

> *"And then she started to accuse me of being a bad occupational physician, and how it is possible that I can decide within 15 minutes that she has to go back to work and she proposed in a very arrogant way that, maybe, it would be better for her to go wild so I could witness the nature of her illness … And then she demanded that I should contact her psychologist… and finally she ran away hysterically".*

Guideline factors were perceived as barriers to using the guideline. For example, some OPs reported difficulties with having both an extensive guideline and a large background document, which makes it difficult to get a proper overview of the subject matter:

> *"I think the guideline is kind of non-transparent and, of course, it's an extensive guideline and therefore we need an extensive supporting background document as well, and the problem is, according to me, to relate all the different parts".*

Work-contextual factors were also commonly perceived by the OPs as barriers and consisted of six types: work pressure/lack of time, the setting OPs operate in, organizational constraints, contracts between OHSs and employers, the policy of and collaboration with other parties and the fear of misuse of information or control by others.

Work pressure/lack of time was a widely perceived work-contextual barrier. OPs mentioned that a lack of time or work pressure often hindered them from following the guideline recommendations in practice:

> *"If you work under time pressure and someone with psychological problems pays you a visit and you only have about 5 or 10 minutes left you might think: I shake his hand, we have a brief conversation and I just agree with him and tell him to stay home and we'll see each other next time. This is how you may think sometimes. It's something I don't support at all, but it could happen for reasons of self-protection".*

A second work-contextual barrier was the *setting OPs operate in*. Some OPs reported to experience the setting as difficult in terms of the role they have in assessments, questioning their independency towards the worker.
Organizational constraints were mentioned as barriers to guideline adherence. First, the policy of OHSs which affects, for instance, the work pressure of OPs, was considered as a barrier. Second, non-user-friendly (electronic health record) systems or differences in used systems among OPs were reported as a barrier to follow the guideline. OPs indicated that the systems they used and reported in were considered as non-user-friendly and made it difficult to work in accordance with the guideline. And third, lack of resources and practical constraints were experienced as barriers. OPs mentioned that working at several different locations (companies) made it very difficult to have the intervention tools readily available when needed:

> *"I really need just a list and I got that kind of list, but yeah, I work at twenty different locations, resulting in that the list is lost all the time. Yes, yes I know I could keep the list in my briefcase, but there is already a lot of necessary and obligated stuff in it".*

The fourth work-contextual barrier was *contracts between OHSs and employers*. Tight contracts in terms of the available time and reimbursement did not always match with, for example, some of the preconditions of the guideline, i.e. seeing workers within the first two weeks.

Another commonly perceived barrier was a conflicting *policy of and lack of collaboration with other parties.* First the policy of and collaboration with employers was sometimes perceived as a barrier, for instance if opinions of employers regarding how to provide care for the worker did not match with those of the OPs, or if there were no clear arrangements in terms of how to provide care. Second, the policy of and collaboration with other disciplines, when such as GPs and psychologists were often reported as barriers. OPs mentioned that the policy of other disciplines, for instance psychologists, sometimes interfered with their own ideas (e.g. treatment takes too long, no attention is being paid to work):

> *"Eventually he goes to see a psychologist. Well, after 8 visits I call him to ask about the situation and to make sure things are beginning to make progress. What are you doing because this doesn't work at all? I mean, treatment right, but it's not helping!".*

In addition, some OPs mentioned that the collaboration with other disciplines was often suboptimal with no adequate (arrangements for) communication, reporting or feedback:

> *"And I notice that some psychologists do not respond or provide feedback at all…. others do write some small comments in OCA [an electronic health record (EHR) system], but most of the time it's like a message in the kind of: he has to take it easy or uh .. something like that".*

Finally *fear of misuse of information or control by others* was perceived as a barrier by some of the OPs with respect to reporting in medical files, which is recommended in the guideline. OPs indicated that they sometimes feared for control of others or misuse of information and that they sometimes deliberately refrained from writing things down in patients' medical records or write it down in such a way that it was only readable/legible for themselves:

> *"You have to use abbreviations. I sometimes use those, and I know exactly what those mean but nobody else does".*

Table 2: Overview of perceived barriers to using the guideline on mental health problems among OPs*

1.	**Knowledge-related barriers**
-	**Lack of knowledge** Lack of knowledge of (content of) guideline recommendations Lack of knowledge of availability of guideline-related tools (e.g. rumination exercise, metaphors)
2.	**Attitude-related barriers**
-	**Lack of agreement guidelines in general** Lack of agreement with the concept of guidelines (e.g. perceiving them as too dogmatic, involving too much bureaucracy, too rigid to apply, not practical).
-	**Lack of agreement with this specific guideline** Lack of agreement with the guideline due to a lack of applicability of its recommendations in practice (e.g. perceiving practice as more complex than guideline and not being able to capture reality in the guideline).
-	**Lack of self-efficacy** Lack of believe that one can actually perform a behavior or guideline recommendation.
-	**Lack of outcome expectancy** Lack of believe that a given behavior will actually lead to a particular consequence.
-	**Inertia of previous practice** Experiencing difficulties with changing habits and routines in order to learn new things.

3. External barriers

- **Worker factors**
  Perceiving worker factors as difficult in adhering to the guideline (e.g. patient preferences, demands, behavior).
- **Guideline factors**
  Perceiving the guideline or its recommendations as difficult in adhering to the guideline (e.g. not clear, verbose, inconsistent, too complex of a terminology, not easy to read/readable).
- **Work-contextual factors**
  Perceiving factors in the work-context of the OP as difficult in adhering to the guideline, such as:
  - ➔ ***Work pressure/Lack of time***
  - ➔ ***Setting OPs operate in*** (e.g. difficult setting in terms of the role OPs have in assessments, questioning their independency towards the worker)
  - ➔ ***Organizational constraints***
    - **Policy of OHS** (e.g. policy with respect to work pressure)
    - **Non-user friendly computer systems** (e.g. difficult to use/conflicting with one another)
    - **Lack of resources/practical constraints** (e.g. not having tools available when working at several locations)
  - ➔ ***Contracts between OHSs and employers*** (e.g. too tight arrangements in terms of available time/reimbursement)
  - ➔ ***Conflicting policy of and lack of collaboration with other parties***
    - ***Employer policy*** (e.g. conflicting policy with respect to what is best for workers in terms of working/not working, the provided care, non-work-related problems)
    - ***Collaboration with employer*** (e.g. no adequate arrangements in terms of roles and treatment).
    - ***Policy of other disciplines (GP, psychologists etc.)*** (e.g. conflicting policy with respect to type and course of treatment, taking factor work into account)
    - ***Collaboration with other disciplines (GP, psychologists etc.)*** (e.g. no adequate arrangements in terms of communication, reporting and feedback)
  - ➔ ***Fear of misuse of information/control by others*** (e.g. fear that medical practice data will be used for other purposes by disciplinary jurisdiction or by Dutch Institute for Employee Benefit Schemes) (UWV in Dutch) etc.)

** For which the framework of barriers of Cabana et al [19] was used as a basis to classify the perceived barriers to guideline adherence*

OP(s): occupational physician(s)

OHS(s): occupational health service(s)

GP: general practitioner

UWV: Dutch Institute for Employee Benefit Schemes (UWV in Dutch)

Solutions to overcome the barriers

In Table 3 an overview is presented of the suggested solutions the OPs came up with to address the identified barriers. They can be divided into six types of solutions.

First, *providing information on the guideline and guideline-related tools* was an often tested solution to overcome barriers. Both the trainer and the OPs themselves provided knowledge to the (rest of the) OPs, such as explaining how the guideline needs to be interpreted and referring to the availability of guideline-related tools such as the digital version of the guideline, relevant websites, intervention tools and information letters for patients and employers. These solutions particularly targeted knowledge-related and attitude-related barriers.

Another often tested solution to address the identified barriers was *sharing experiences, tips and tricks* among OPs. Experiences such as the perceived value of adequate reporting in medical files and tips and tricks such as not accepting too tight contracts from employers, suggesting to refer patients to psychiatrists with (trans)cultural expertise and sharing tricks on how to document adequately in medical files. This type of solution was particularly used to address the attitude-related barriers lack of self-efficacy and inertia of previous practice and to a lesser extent external barriers.

Third, OPs suggested and tested the solution to *present one or more case studies of their workers to their peer OPs in the group* and explain how they have dealt with these particular cases, while other OPs provided feedback. This was done for both complex and successful cases and mostly targeted knowledge-related and attitude-related barriers.

Another solution the OPs came up with and tested during the year of the training was *reading and discussing each other's reporting in (anonymized) medical files*. This solution was particularly tested to address knowledge-related barriers and attitude-related barriers such as lack of self-efficacy and inertia of previous practice.

The fifth type of tested solution was to *develop new tools or to adjust current tools to meet the needs of the individual or groups of OPs.* These tools included a format to structure the worker interview, a 4DSQ (Four Dimensional Symptom Questionnaire; 4DKL in Dutch) tool in a digital excel version with an automatic calculation module, a book with cognitive behavioral interventions with input from participating OPs from all groups to be used during consultation, a power-point presentation to educate the working-environment of workers, a referral list with names of healthcare providers of other disciplines (e.g. psychologists, psychiatrists) recommended by participating OPs from several groups, and a fan-shaped tool with a summary of the guideline. Finally, OPs created a digital toolbox consisting of a combination of the above preferred tools of individual OPs. These solutions were mainly tested to overcome knowledge-

related and attitude-related barriers such as lack of self-efficacy and to a lesser extent external barriers such as practical constraints as not having intervention tools available when working at several locations.

Finally, *other solutions* were suggested by OPs, but most of them were only partly tested during the year of the training. These focused mainly on improving communication and collaboration with psychologists such as creating adequate arrangements for communication, reporting or feedback between OPs and psychologists, setting minimal standards for reporting by psychologists and organizing meetings for OPs and psychologist to discuss policy. These solutions were particularly suggested to overcome external barriers such as conflicting policy of and collaboration with other disciplines.

Table 3: Overview of (partly) tested solutions to address barriers to using the guideline on mental health problems

1. **Providing information about guideline and guideline-related tools**
    - Providing information about the guideline by trainer or peers
    - Providing information about or referring to the availability of tools to improve guideline usage such as:
        - Digital version of the guideline
        - Relevant website such as www.psychischenwerk.nl (website with information and tools on psychological disorders and fatigue complaints at work)
        - Relevant related guidelines and knowledge documents, such as 'the NVAB guide for Referring' and 'the knowledge document **STECR' (a working guide to deal with conflicts at work).**
        - Relevant courses, such as the E-course MUPS (SOLK in Dutch)
        - **Relevant surveys, such as** UBOS survey (burnout)
        - Intervention tools available on G-drive of the OHS computer system
        - Information letter for patients from the NHG
        - Information letter for employers from the NVAB

2. **Sharing experiences, tips and tricks**
    - Exchanging experiences in group(s) on the advantages or disadvantages of working in accordance with (certain parts of) the guideline, guideline related tools and reporting in medical files.
    - Sharing tips and tricks in group, such as not accepting too tight contracts from employers, referring patients to psychiatrists with (trans)cultural expertise, tips and tricks on how to document adequately in medical files, how to use the 4DSQ (4DKL in Dutch), how to deal with suicide.

3. **Presenting and discussing worker case studies**
    - Presenting one or more complex or successful (anonymized) worker case studies in the group and explain how they have dealt with this while other OPs provide feedback.

4. Reading and discussing peer OPs' reporting in medical files

- Reading (anonymized) medical files of peer OPs and provide feedback.

5. Developing and adjusting tools to improve guideline usage

- Developing a format to structure the worker interview, adjusting it to individual needs and discussing ways to implement it in practice (place format on desktop, add a checklist to the format, add the format to the fan-shaped tool)
- Developing the 4DSQ tool in a digital excel version with an automatic calculation module
- Creating a book with cognitive-behavioral interventions to be used during consultation, all invented or collected by the OPs and put together in a book
- Creating a power-point presentation to educate employers or broader work-context
- Creating a referral list with healthcare providers that OPs within the group recommend
- Adjusting the fan-shaped tool with a summary of the guideline to include the format

→ *Digital toolbox: creating an individual digital toolbox with a combination of above interventions as preferred by individual OPs*

6. Other solutions (partly tested)

- Creating adequate (working) arrangements with respect to communication, reporting and feedback between OPs and psychologists
- Setting minimal standards for reporting for psychologists
- Initiating group conversations with worker, employer, psychologist and OP
- Organizing meetings for both psychologists and OPs to discuss the guideline on mental health problems
-

NVAB: Netherlands Society of Occupational Physicians (NVAB in Dutch)
MUPS: Medically Unexplained Physical Symptoms (SOLK in Dutch)
UBOS: Utrecht Burnout Scale
OHS: occupational health service
NHG: Dutch College of General Practitioners (NHG in Dutch)
4DSQ: Four Dimensional Symptom Questionnaire (4DKL in Dutch)
OP(s): occupational physician(s)

Discussion

This study aimed to provide an overview of the barriers Dutch OPs perceive in adhering to the guideline on mental health problems as well as the solutions they came up with to address them. We found that a range of knowledge-related, attitude-related and external barriers hindered OPs from following the guideline on mental health problems in practice, with an emphasis on work-contextual barriers. To overcome the identified barriers, several solutions were suggested and tested during the year of training, which mostly seem to target knowledge-related and attitude-related barriers. To optimally improve adherence to this and similar occupational mental health guidelines, it seems important to complement training and education of OPs with interventions

addressing work-contextual barriers, such as changing tight contracts, or improving communication and collaboration with relevant stakeholders.

In line with Cabana's framework [19] results from this study show that all three main types of barriers - knowledge-related, attitude-related, and external barriers - prevented OPs from following the guideline in practice. OPs lacked knowledge regarding the content of all parts of the guideline and perceived a lack of self-efficacy to perform certain recommendations and difficulties with changing habits and routines. These knowledge and attitude-related barriers may indicate that this guideline was not well introduced among the target group of OPs after being published. However, 90% of the participants of the training had previously been educated in this guideline through short-term continuing medical education courses. Therefore, it may well be, that a multiple-session guideline training, as conducted in this study, is in fact needed to improve OPs' knowledge, self-efficacy and skills regarding this guideline [24]. This may be necessary for process-based guidelines focusing on behavior change of the professionals, which usually cannot be accomplished in short-term courses. The current guideline asks for cognitive-behavioral skills and competencies of OPs that were not included in their professional education which predominantly focused on physical health problems. It may particularly be these types of mental guidelines for which a thorough multiple-session guideline training is useful.

External barriers and particularly work-contextual barriers were commonly reported by OPs in the training. Compared to barrier studies focusing on other types of healthcare providers (e.g. specialists [34], GPs [32, 35]), it seems that work-contextual barriers have a more prominent place among OPs, with a larger range of these barriers reported, such as work pressure/lack of time, contracts between OHSs and employers, and conflicting policy of and a lack of cooperation with employers and other disciplines. This may be related to the central role that OPs have within the (Dutch) social security system. As a consequence, they have to deal with many different stakeholders i.e. the workers, employers, the OHS, and other disciplines [36]. Changes in clinical practice and particularly worker outcomes are therefore only partly within OPs' control; many other factors determine the outcomes. This complicates the process of implementing a guideline and asks for effective management and interventions focusing on the OPs and their larger context.

The solutions tested by OPs during the year of the training seem to preliminary focus on their widely-perceived knowledge-related and attitude-related barriers. Solutions varied from sharing information and experiences to developing or adjusting tools to facilitate the use of the guideline such as an individual digital toolbox. Solutions were only tested in practice if they were appealing to the OPs, and all were evaluated and if needed adjusted [24]. Besides from these knowledge and attitude-focused solutions, various interventions to address work-contextual barriers were

suggested, such as not accepting too tight contracts in terms of available time and reimbursement, developing a referral list with high-quality healthcare providers, and developing working arrangements on communication, reporting and feedback with psychologists including minimal standards for reporting. Most of these solutions, however, were only partly tested in practice as implementing them usually required more time and the involvement of other stakeholders.

In designing guideline implementation programs it may be useful to complement guideline training and education of individuals or groups of OPs with interventions focusing on the larger context of OPs. Even if OPs are aware of the content of the guideline and have the intention to use it in practice, external barriers may still hinder them from following it in practice [19]. These include work-contextual barriers but also worker factors and guideline factors. To address work-contextual barriers, it may be useful to involve the OHSs in the implementation process. They could facilitate working conditions in terms of the available time and reimbursement needed to adequately implement the guideline in practice and provide a solution-focused environment. In addition, other stakeholders, such as employers, GPs and psychologists should be involved to align policies and to facilitate collaboration. Relevant stakeholders, including the workers themselves, should not only be engaged in the guideline implementation process, but if possible, also in the initial guideline development process or its critical revision.

A strength of this study is that the perceived barriers were assessed within the same group(s) of OPs over a longer period of time. Whereas many barrier studies have been conducted in other healthcare settings e.g. [32, 34, 35, 37], most studies have only measured barriers cross-sectionally. Perceived barriers, however, may vary across different stages of implementation [20]. For instance, knowledge-related barriers may be most relevant at the beginning of the implementation process, whereas, once these have been removed, the existence of attitude-related and external barriers may come forward [24]. Assessing barriers over a period of time, therefore provides a more complete picture and gives room to all types of barriers. Second, the solutions OPs came up with were tailored to these barriers, taking into account the context of daily practice, and if needed adjusted during the year of the training [24]. In addition, whereas the overview of proposed solutions may not be sufficient to target all barriers, it consists of solutions that were all suggested and appreciated by the target group itself, which is crucial for successful implementation and behavior change [22]. Whether practicing these solutions positively affects guideline adherence needs to be further examined.

Some limitations should also be considered in interpreting our findings. First, whereas the barriers were assessed over a longer period of time, the qualitative design of this study (and the fact that in each session a new topic of the guideline was discussed), did not allow us to analyze the results longitudinally. Rather, we provided an overview of all barriers that were perceived by

participating OPs during the year of the training. Future quantitative studies could focus on the evolution of barriers in relation to the proposed solutions and the different stages of implementation of the target group(s). In addition, results of this study are based on a Dutch occupational guideline on mental health, which limits the generalizability of our findings. The few occupational mental health guidelines that are available worldwide have comparable content, yet varying levels of reporting quality [10]. Also, the Dutch context differs from that of others countries [27, 36], which may affect the perceived barriers and related solutions to some extent. Nevertheless, we believe the overviews of barriers and solutions is a valuable basis to be used in developing and implementing similar guidelines in other countries.

Conclusions

Despite their major impact on sickness absence, only few clinical occupational health guidelines on mental health problems are available worldwide [10] and, thus far, little is known on how to successfully implement these guidelines in practice. Results from this study suggest that an extensive guideline training and education for groups of OPs, to target their knowledge and attitude-related barriers in adhering to the guideline, may indeed be useful. To optimally implement this or similar guidelines, however, it seems necessary to address work-contextual barriers and other external barriers as well, by focusing on the larger context of OPs. Engaging all relevant stakeholders (e.g. workers, employers, OHSs, other disciplines) in the guideline implementation process, as well as in its initial development process or revision is strongly recommended.

Declarations

Abbreviations

OP(s): occupational physician(s)
OHS(s): occupational health service(s)
NVAB: Netherlands Society of Occupational Physicians (NVAB in Dutch)
RTW: return-to-work
GP: general practitioner
PDCA: plan-do-check-act
UWV: Dutch Institute for Employee Benefit Schemes (UWV in Dutch)
EHRS: Electronic Health Record System
MOPS: Medically Unexplained Physical Symptoms (SOLK in Dutch)
UBOS: Utrecht Burnout Scale
NHG: Dutch College of General Practitioners (NHG in Dutch)
4DSQ: Four Dimensional Symptom Questionnaire (4DKL in Dutch)

Ethics approval and consent to participate

The study protocol of this trial was approved by the Medical Research Ethics Committee of the Elisabeth Hospital in Tilburg, the Netherlands (MREC number 1162). Written informed consent was obtained from all participants.

Consent for publication

Not applicable.

Availability of Data and Materials

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

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Competing interests

JvdK was the manager and main author in the development of the NVAB guideline and does not receive fees for the use of the guideline. ML, KvB, EB, BT, JvW and MJ declare that they have no competing interests.

Authors' contributions

ML drafted and revised the manuscript and was involved in analyzing and interpreting the data. KvB, EB, BT, JvW, JvdK and MJ were involved in designing the study, interpreting the data and revising the manuscript. KvB, EB, JvW, JvdK and MJ also contributed in analyzing the data. MJ also participated in collecting the data. All authors read and approved the final manuscript.

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Chapter 5

Effectiveness of a tailored implementation strategy to improve occupational physicians' adherence to a practice guideline: a cluster randomized controlled trial

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Submitted

Abstract

Objectives

1) To assess to what extent occupational physicians (OPs) adhere to the Dutch 'Mental Health Problems' guideline, 2) to evaluate the effect of a tailored implementation strategy for OPs on adherence to the 'Mental Health Problems' guideline compared to traditional guideline dissemination.

Methods

Guideline adherence was assessed by an audit of medical records, using 12 guideline-based performance indicators (PI) grouped into 5 key PIs. In a cluster randomized controlled trial, OPs in the intervention group received a multiple-session peer group training. The training focused on identifying and addressing (knowledge-related, attitude-related and external) barriers to use the guideline, using a Plan-Do-Check-Act approach. The control group did not receive training. Differences in performance rates of the PIs between the intervention and control groups were analyzed, taking into account the multilevel effect.

Results

Overall guideline adherence among OPs was poor. Specifically, low adherence was found in relapse prevention (80%) and regular contact with the employer (80%). Adequate adherence was found regarding a rapid first consultation with the worker (53%). OPs who received the training showed significantly greater guideline adherence compared to the controls ($p<.028$) in 4 out of 5 key PIs (i.e. process diagnosis, problem orientation, interventions/treatment and relapse prevention).

Conclusions

Our results imply that an implementation strategy focusing on perceived barriers and tailor-made interventions improves adherence to the 'Mental Health Problems' guideline compared to traditional guideline dissemination. However, guideline adherence to the guideline was still far from optimal and needs to improve to guarantee high quality of occupational health care.

Introduction

Although many evidence-based practice guidelines exist in health care, adherence to these guidelines is generally low among care professionals [1, 2]. Not working according to practice guidelines can lead to omission of necessary care, suboptimal patient outcomes and a waste of resources [3]. Implementation of and adherence to practice guidelines is important for improving the quality of patient care and can help decrease variability in treatment. [4].

Guideline implementation can be influenced by multiple factors, such as patient and provider characteristics, environmental factors, and the socio-political context [5, 6]. More specifically, Cabana and colleagues [7] have shown that barriers to guideline adherence can be knowledge-related such as a lack of awareness or familiarity, or attitude-related such as a lack of agreement, self-efficacy, or motivation. External barriers such as patient factors, guideline factors, and environmental factors may also obstruct the professional from using the guideline. To improve guideline adherence, identification of the perceived barriers among the target group is usually considered to be a first important step [8]. Furthermore, it is recommended to use active implementation strategies tailored to professionals' needs to overcome perceived barriers [9, 10].

Evidence-based guidelines for occupational health professionals on the management of mental health problems have been developed in several countries [11]. Among these is the Dutch guideline entitled 'The management of mental health problems of workers by occupational physicians (OPs)' ('Mental Health Problems' guideline) [12, 13]. Currently, mental health problems, such as depression or anxiety, are among the leading causes of work disability worldwide [14-16]. The 'Mental Health Problems' guideline aims to establish improved and sustainable work functioning and relapse prevention among workers with mental health problems. One of the central aspects of this guideline for OPs is to follow an activating approach aiming to enhance the problem solving capacity of workers, particularly in relation to their work context.

Despite various efforts to implement the 'Mental Health Problems' guideline among Dutch OPs, research indicates that OPs' adherence to the guideline's recommendations in practice is suboptimal [17, 18]. OPs do, however, report a positive attitude towards the guideline in general and the intention to use it [19]. In addition, there is some evidence for a positive association between adherence to the guideline and a shortened sick leave duration for workers with adjustment disorders [18] and common mental health problems in general [17].

As part of a cluster randomized controlled trial (RCT), which aimed to explore how the management of sick-listed workers by OPs can be improved [20], a tailored implementation strategy was developed for OPs to improve their adherence to the 'Mental Health Problems' guideline. OPs received a multiple-session interactive peer group training focusing on identifying and addressing barriers. The training was evaluated as a feasible, much appreciated method among participating OPs and contributed to OPs' knowledge, attitudes and skills using the

guideline [21]. Although OPs were satisfied with the guideline training, actual adherence to the guideline is still unknown. The current study aims to assess adherence to the 'Mental Health Problems' guideline and the effect of a tailored implementation strategy on guideline adherence in addition to implementation as usual (that is, dissemination of the guideline among Dutch OPs and short continuing medical education courses).

Research question:
1. To what extent do occupational physicians (both intervention group and control group) adhere to the 'Mental Health Problems' guideline?
2. What is the effect of a tailored implementation strategy on guideline adherence among occupational physicians compared to implementation as usual?

Method

Setting

In the Netherlands, OPs assist employers and workers in occupational health issues, safety and sickness absence management by providing occupational health care to the working population [22]. When a worker reports sick, the employer and worker are both responsible for the recovery and return-to-work. The employer is also obligated to provide access to an OP for assessment of work ability and support. Most Dutch employers have contracts with independently operating Organizational Health Services (OHSs). OPs employed at an OHS often work for several companies at multiple locations.

Since 1998, The Netherlands Society of Occupational Physicians (NVAB), has developed and implemented evidence-based practice guidelines for OPs for a variety of conditions and diseases [23]. In this study we used the 'Mental Health Problems' guideline for OPs. It was developed in 2000 [12] and revised in 2007 [13] . The guideline is evidence-based and of 'moderate to high developing and reporting quality' according to appraisal using the internationally validated AGREEII instrument [11].

The 'Mental Health Problems' guideline [13] recommends OPs to use a process-based approach in both case and care management. The content of the guideline is based on cognitive behavioral principles aiming to enhance the problem solving capacity of workers, particularly in relation to their work context (See Table 1).

Table 1. Summary of the content of the 'Mental Health Problems' guideline [13]

1. Problem Orientation and Diagnosis	An early involvement of the OP in the sick leave process of the worker is promoted (first consultation within 2 weeks after the worker reports sick). A simplified classification of mental health problems is introduced in four categories: i) stress-related complaints, ii) depression, iii) anxiety disorder, and iv) other psychiatric disorders. Furthermore, the problem inventory should focus on factors related to the worker, his or her work environment, and the interaction between these two.
2. Intervention/Treatment	The OP acts as case manager by monitoring and evaluating the process of recovery. If recovery stagnates, the OP should intervene by acting as care manager (or delegate this role) by using cognitive behavioral techniques to enhance the problem-solving capacity of the worker, providing the worker and work environment with information/advice on the recovery and the RTW process, contact the general practitioner when problems remain the same or increase, and refer the worker to a specialized intervention if necessary. In addition, the OP should advise the work environment (e.g., supervisors, managers, and human resource managers) on how to support the worker and enhance the recovery and RTW process.
3. Relapse Prevention	Integration of relapse prevention from the first contact with the worker by enhancing the problem-solving capacity of the worker. The newly acquired problem solving skills are explicitly addressed in at least one specific relapse prevention meeting after RTW.
4. Evaluation	During all meetings, evaluation of the recovery process includes the perspectives of the worker, supervisor, and other involved professionals. Follow-up meetings with the worker should take place every 3 weeks during the first 3 months, and every 6 weeks thereafter. The supervisor or work environment should be contacted once a month. Follow-up contacts with the general practitioner or other professionals should take place when the recovery process stagnates or when there is doubt about the diagnosis or treatment.

OP = Occupational physician; RTW = return-to-work

Study design

This study was part of a two-armed cluster randomized controlled trial [20]. Randomization to the control and intervention condition was performed at the level of participating OPs by computerized allocation. The OPs in the intervention group received an innovative guideline training and received educational credits after completing the training. OPs in the control group received no extra training in the guideline and performed care as usual. In the years previous to this study, the guideline was distributed among Dutch OPs and became part of their continuing medical education. Therefore, it is assumed that most of the OPs had at least minimal knowledge of the guideline.

After the training, data on guideline adherence were collected by means of an audit of medical records of sick-listed workers with mental health problems who were guided by OPs

participating in this study (both OPs in the intervention and control condition). To evaluate medical records, performance indicators (PIs) were developed based on the content of the guideline. Data were collected between November 2012 and January 2014.

Approval was obtained from the Medical Research Ethics Committee of St. Elisabeth Hospital in Tilburg. This study was registered in the ISTCTN trial register, ISRCTN86605310. The "CONSORT 2010 statement: extension to cluster randomized controlled trials" was used for reporting [24].

Implementation strategy – Intervention group

The guideline training for OPs was developed as a tailored implementation strategy aimed at improving OPs' adherence to the 'Mental Health Problems' guideline. The training consisted of eight two-hour-meetings which were scheduled over the course of one year; January 2011 – January 2012. The training sessions were held at six regional offices of the OHS across the southern part of the Netherlands; each group attended the training at one location.

The training focused on identifying and addressing barriers OPs perceived in using the guideline recommendations in practice. The framework of Cabana was used to identify barriers related to knowledge, attitude and external barriers [7]. The training incorporated the different parts of the guideline, with each session focusing on a different topic. A Plan-Do-Check-Act (PDCA) approach was used to structure the discussions. In each session the trainer (MJ) asked the OPs to discuss which barriers they perceived in adhering to that specific topic. Next, OPs suggested solutions to address these barriers, taking into account the context of their daily practice. Subsequently, OPs tested the solutions in their daily practice. Finally, results were evaluated and, if necessary, solutions were adjusted. This PDCA cycle was repeated in each meeting and for all topics stated in the guideline. The training was provided to small scale groups to encourage discussion among OPs and to learn from their peers. The trainer (MJ) guided the groups by structuring the meetings, facilitating the discussions and monitoring the progress. A detailed description of the implementation strategy can be found elsewhere [21].

Participants

Occupational physicians

OPs were recruited between October 2010 and January 2011 from a large OHS in the Netherlands. All 155 OPs from sites in the southern part of the Netherlands were invited to participate. First, the researchers (MJ and EB) presented their research proposal of the trial [20] at several meetings for OPs at the OHS, after which OPs could sign up to participate. Subsequently, an invitation was sent by email to all OPs; a reminder email was sent after two weeks. Finally, all OPs who had not yet responded were invited by telephone.

Medical records

Medical records of sick-listed workers who were guided by participating OPs were used to assess adherence. Workers were selected from the registration system of the OHS based on the following inclusion criteria: 1) age 18-64 years, 2) a first period of sickness absence between January 1st 2012 and January 15th 2013, 3) receiving guidance by an OP who participated in the study and who had diagnosed that mental health problems were the primary reason for sick leave (according to the Dutch Classification of Diseases, based on the ICD-10)[25]. The OHS invited the eligible workers to participate in this study. Participating workers gave their written informed consent and signed a separate consent form if they gave permission to audit their medical records. After inclusion questionnaires were filled out regarding socio-demographic characteristics, personal and work factors and clinical characteristics. More details about these questionnaires are described elsewhere [20].

OPs were not informed about the inclusion of specific workers into the study, but they did know which workers were invited to participate (about 500 workers in total). The workers were employed at companies that varied in size and served different sectors. Workers and employers were blinded for randomization since they were not aware of the group allocation of their OP.

Data collection on guideline adherence

Performance indicators (PIs)

Guideline adherence was assessed by means of an audit of medical records. In previous studies a set of PIs was used to evaluate adherence to the 'Mental Health Problems' guideline developed in 2000 [17, 18, 26]. As the guideline was revised in 2007 the initial PIs did not cover the content of the revised guideline. Therefore, a new set of PIs was developed that covered the essence of the revised guideline.

The set of PIs was systematically developed using an iterative consensus rating procedure in three steps: (i) preselection of recommendations; (ii) expert consensus procedure; and (iii) transcription and classification of final set of indicators [27-29].

1. Preselection of recommendations. Three authors (JvdK, DR, ML) independently preselected all recommendations from the 'Mental health problems' guideline. They focused on the most important guideline recommendations that would have impact on the quality of occupational health care. This resulted in a list of 24 recommendations.

2. Expert consensus procedure. An expert meeting was organized with mental health specialists, work and health specialists, quality of care researchers, OPs, an occupational therapist, a general practitioner and a patient representative. In a two-round consensus procedure, the panel of 9 experts discussed the relevance of the recommendations to physicians' performance and patients' health benefit. Moreover, the experts discussed which

recommendations reflected the essence of the guideline and how the PIs should be best formulated. This resulted in a selection of 20 recommendations.

3. Transcription, pilot testing and classification of final set of indicators. The selected 20 recommendations were transcribed into indicators and a subsequent scoring set. Ten medical records were pilot tested by two researchers independently. Based on the comments of the reviewers about feasibility (e.g. easy in use), measurability (e.g. is all information needed available in medical records) and relevance (e.g. are indicators relevant to quality of care), the list of PIs was adjusted. The final set of PI's consisted of 12 indicators grouped into 5 categories of key indicators. The PIs measured different aspects of the management of mental health problems, including diagnosis, management of mental health problems, relapse prevention and continuity of care. The PIs are presented in Table 2.

Audit of medical records

From each record, we used the recordings of all consultations from the first day of sick leave until the involvement of the OP ended, or after one year sickness absence. Two assessors independently assessed all medical records. The assessors used an audit form which included detailed description of the PIs and instructions for rating each PI. If the rating was not congruent, the two assessors would discuss the case. If no consensus was reached a third assessor audited the medical record and decided about the final score. To guarantee blinding of the outcome assessors, medical records were stripped of information relating to the OP (name, allocation to intervention or control group).

Each of the 12 PIs was rated as 0 (no adherence), 1 (low adherence), or 2 (adequate adherence). For each key PI a sum score was calculated by summing the scores of the corresponding PIs divided by the number of PIs. In addition, a total score of all PIs was calculated by summing the scores of all key PIs divided by the number of key PIs, which was called 'Overall guideline adherence'. Post hoc, the performance scores were dichotomized because there were too few medical records showing adequate adherence (score 2), see table 4. Scores were dichotomized into 'low-moderate guideline adherence' (scores ≥ 1) and 'no guideline adherence' (scores < 1). Finally, performance rates were calculated as the percentage of medical records in which guideline-based care was provided.

Statistical analysis

To describe guideline adherence among the total group of OPs, descriptive statistics were used among all 12 PIs describing the frequencies of scores on no adherence, low adherence and adequate adherence of the guideline.

To evaluate the differences in guideline adherence between intervention group and control group, for each PI the performance rates were compared. We first checked whether it was necessary to control for the cluster level effect of the OPs, using Logistic multilevel analyses

within Generalized Linear Mixed Models (GLMM). For all variables the best-fitting model, with or without correction for the cluster level, was chosen based on the Akaike information criterion (smallest AIC represents best-fitting model). If the model with correction for the cluster level was the best fitting model, GLMM analyses were performed. Chi-square analyses were performed if the model without correction for the levels was best fitting.

All analyses were performed with SPSS version 19.0.

Table 2. Description of 12 performance indicators (PI) for OP's guideline adherence in workers' medical records and criteria for their scoring.

Performance Indicator based on guideline content		Criteria based on guideline content	Degree of guideline adherence
1.	**Process diagnosis**		
1.1	Monitoring the recovery phase of the worker	The process of recovery (i.e. phase of the recovery process: crisis phase, problem solving phase, implementation phase) should be monitored throughout the sickness absence period	0 = Recovery phase is not noted 1 = Recovery phase is occasionally noted 2 = Recovery phase is regularly noted
1.2	Assessment of the recovery tasks worker	The tasks needed to achieve recovery should be assessed throughout the sickness absence period (e.g. gaining insight into what happened, accepting the situation, regain day structure, problem identification and finding solutions, implement solutions, regain roles)	0 = Recovery tasks are not noted 1 = Recovery tasks are occasionally noted 2 = Recovery tasks are regularly noted
1.3	Assessment of employers' perspective	The way the employer (e.g. supervisor, management, human resource management) copes with the sick listed worker and their perspective on recovery should be assessed during the sickness absence period	0 = No information about employers' perspective 1 = Occasional information about employers' perspective 2 = Clear description of the employers' perspective in relation to the workers' situation
2.	**Problem orientation**		
2.1	Problem identification	The relation between factors that influence the mental health problems and performance at work and home should be identified (e.g. overburdened by high workload or work conflict or lack of social support)	0 = Problems are not noted 1 = Problems are noted, relation with performance is not noted 2 = Problems and their relation with performance are noted
2.2	Assessment of symptoms	Presence or absence of essential symptoms of mental health problems should be assessed (i.e. distress, depression, anxiety, and somatization)	0 = No symptoms are noted 1 = Symptoms are occasionally noted 2 = Presence or absence of the essential symptoms are noted
2.3	Diagnosis	Diagnosis based on ICD-10 and supported with arguments	0 = No diagnosis is noted 1 = Diagnosis is noted without arguments 2 = Diagnosis including arguments is noted

3. Intervention/Treatment			
3.1	Evaluation course recovery process worker	The course of the recovery process (stagnation or recovery process as expected) should be evaluated and supported with arguments.	0 = Course of recovery process is not noted 1 = Course of recovery process is noted without arguments 2 = Course of recovery process is noted including arguments
3.2	Treatment in accordance with recovery process worker	IF recovery process is 'as expected' the OP acts as process manager by monitoring the process of recovery and using minimal interventions. IF recovery process stagnates the OP also acts as care manager by providing a more extensive guidance with treatment based on cognitive behavioral techniques, provide the employer with advice on recovery and the RTW process, contact other involved health care professionals (e.g. general practitioner, psychologist), and if necessary refer the worker to specialized care.	0 = Treatment is not in accordance with the recovery process 1 = Treatment is in accordance with the recovery process without argumentation 2 = Treatment is in accordance with the recovery process including argumentation
4. Relapse prevention			
4.1	Relapse prevention by OP	Relapse prevention should be integrated during consultations AND OP has at least one consultation with the worker after full RTW	0 = No information on relapse prevention 1 = Information on relapse prevention during or after the sickness absence period was noted 2 = Information on relapse prevention during the sickness absence period was noted AND OP has at least one consultation with the worker after full RTW
5. Continuity of care/Evaluation			
5.1	Rapid first consultation worker	The first consultation where both OP and worker are physically present should be within 15 days from 1st day of sickness absence.	0 = First consultation after 22 days 1 = First consultation between 15-22 days 2 = First consultation within 15 days
5.2	Regular contact worker	Consultations with the worker take place every 3 weeks during the first three months of sickness absence. After three months of sickness absence consultations take place every 6 weeks.	0 = Interval between consults is 6 weeks or more during 1st three months AND 9 weeks or more thereafter 1 = Interval between consults is 4-5 weeks during 1st three months AND 7-8 weeks thereafter 2 = Interval between consults is less than 4 weeks during 1st three months AND less than 7 weeks thereafter

5.3	Regular contact employer	The OP contacts with the employer (e.g. supervisor, manager, human resource manager) during the sickness absence period every 4 weeks.	0 = Contacts every 8 weeks or more 1 = Contacts every 5-8 weeks 2 = Contacts every 4 weeks or less

RTW = return to work; OP = occupational physician

Results

A total of 66 OPs agreed to participate and were randomized to either the intervention group (N=32) or the control group (N=34). All 32 OPs from the intervention group received the training and were divided into six groups of 4-6 OPs, based on their work locations. During the one year training period, 10 OPs left their job at the OHS (due to reorganization within the OHS or other reasons) thereby dropping out of the study. Of the remaining 56 OPs, 26 were in the intervention group and 30 in the control group.

In the trial 116 out of 128 workers, gave their written consent for auditing their medical record. Two workers were not included in this study; one record was not available at the OHS and in another case mental health problems were not the primary cause for the sickness absence. They were guided by 34 different OPs. Workers' characteristics are shown in table 3 and showed no statistically significant differences between workers in the intervention group and control group.

In 109 records the two assessors agreed on the ratings of the PIs. In five records a third assessor was consulted to reach consensus. For the analysis, Chi-square analyses were performed because the model without correction for the cluster levels was best fitting.

Table 3. Worker's characteristics in the intervention group and control group

Worker characteristics	**Intervention group**				**Control group**			
	n	**mean**	**SD**	**%**	**n**	**mean**	**SD**	**%**
Age (years)	56	46.1	10.6		58	46.6	10.9	
Gender (male)	22			49.3	25			43.1
Education level								
Low	6			10.7	2			3.4
Medium	16			28.6	15			25.9
High	34			60.7	41			70.7
Work and personal related factors								
Working contract hours a week	56	30.5	9.2		58	30.2	10.9	
Workability[1] (range 0-10)[2]	50	5.3	2.2		53	5.5	2.7	
Clinical characteristics								
Four-Dimensional Symptom Questionnaire (4DSQ)[30]								
Distress (range 0-32)[2]	54	18.1	9.1		55	17.9	9.6	
Depression (range 0-12)[2]	54	2.9	3.7		57	2.7	3.7	
Anxiety (range 0-24)[2]	54	5.2	5.0		55	5.6	5.6	
Somatization (range 0-32)[2]	53	9.2	6.0		54	9.4	7.3	

[1]*Measured with the single question of the workability index (WAI) [31]*
[2]*Higher scores indicate a greater presence of the named factor*

Guideline adherence among all OPs

As can be seen in table 4, guideline adherence was found to be low in 6 out of 12 PIs. In another 5 PIs the majority of medical records showed no adherence. Guideline adherence was especially low in PI 4.1 'Relapse prevention by OP' and PI 5.3 'Regular contact employer' (in respectively 79.8% and 78.9% of the records guideline-based care was not provided). Adequate guideline adherence was found in PI 5.1 'Rapid first consultation worker' (in 52.6% of the records guideline-based care was optimally provided).

Table 4. Guideline adherence in medical records (n=114) of OPs in both intervention and control group. Number of medical records in which guideline-based care was not provided (no adherence), minimally provided (low adherence) or optimally provided (adequate adherence) and their percentage score (performance rate)

Performance indicator	**no adherence n (%)**	**low adherence n (%)**	**adequate adherence n (%)**
Process diagnosis			
1.1 Monitoring recovery phase worker	65 (57.0%)*	43 (37.7%)	6 (5.3%)
1.2 Assessment of the recovery tasks worker	52 (45.6%)	59 (51.8%)*	3 (2.6%)
1.3 Assessment of employers' perspective	38 (33.3%)	58 (50.9%)*	18 (15.8%)
Problem orientation			
2.1 Problem identification	5 (4.4%)	88 (77.2%)*	21 (18.4%)
2.2 Assessment of symptoms	75 (65.8%)*	32 (28.1%)	7 (6.1%)
2.3 Diagnosis	18 (15.8%)	88 (77.2%)*	8 (7.0%)
Interventions/treatment			
3.1 Evaluation course recovery process worker	51 (44.7%)	54 (47.4%)*	9 (7.9%)
3.2 Treatment in accordance with recovery process worker	56 (49.1%)*	44 (38.6%)	14 (12.3%)
Relapse prevention			
4.1 Relapse prevention by OP	91 (79.8%)*	21 (18.4%)	2 (1.8%)
Continuity of care			
5.1 Rapid first consultation worker	36 (31.6%)	18 (15.8%)	60 (52.6%)*
5.2 Regular contact worker	41 (36.0%)	43 (37.7%)*	30 (26.3%)
5.3 Regular contact employer	90 (78.9%)*	10 (8.8%)	14 (12.3%)

**Highest number of medical records within this performance indicator*

Effect of a guideline training on guideline adherence

Table 5 shows the performance rates for both the intervention and the control group. A significant higher performance rate ($p<.028$) was found in the intervention group in 4 out of 5 key PIs: Process diagnosis, Problem orientation, Intervention/treatment and Relapse prevention. In addition, overall guideline adherence was significantly higher in the intervention group

compared to the control group (p=.006). No significant differences were found between the groups in key PI5 'continuity of care'.

In 6 out of 12 of the individual PIs the performance rates of the intervention group were significantly higher than in the control group (p<.039). Low effect sizes (Phi coefficient) were found between the differences of all PIs (<.336).

Table 5. Differences in guideline adherence between intervention and control group
Number of medical records in which guideline-based care was low-moderate (score 1 and 2) consistent with the guideline, their percentage scores (performance rate), and differences (p-value) between intervention group and control group (chi-square test)

Performance indicator	Intervention group (n=56)	Control group (n=58)	P-value (Pearson Chi-square)
	N (%)	N (%)	
PI1. Process diagnosis	24 (42.9%)	12 (20.7%)	.011*
1.1 Monitoring recovery phase worker	32 (57.1%)	17 (29.3%)	.003*
1.2 Assessment of recovery tasks worker	40 (71.4%)	22 (37.9%)	<.001*
1.3 Assessment of employers' perspective	37 (66.1%)	39 (67.2%)	.895
PI2. Problem orientation	30 (53.6%)	18 (31%)	.015*
2.1 Problem identification	56 (100%)	53 (91.4%)	.025*
2.2 Assessment of symptoms	24 (42.9%)	15 (25.9%)	.056
2.3 Diagnosis	50 (89.3%)	46 (79.3%)	.144
PI3. Interventions/treatment	30 (53.6%)	18 (31%)	.015*
3.1 Evaluation course recovery process worker	39 (69.6%)	24 (41.4%)	.002*
3.2 Treatment in accordance with recovery process worker	34 (60.7%)	24 (41.4%)	.039*
PI4. Relapse prevention			
4.1 Relapse prevention by OP	16 (28.6%)	7 (12.1%)	.028*
PI5. Continuity of care	23 (41.1%)	30 (51.7%)	.254
5.1 Rapid first consultation worker	36 (64.3%)	42 (72.4%)	.351
5.2 Regular contact worker	36 (64.3%)	37 (63.8%)	.956
5.3 Regular contact employer	12 (21.4%)	12 (20.7%)	.923
Overall guideline adherence	16 (28.6%)	5 (8.6%)	.006*

** Significant difference P<.05*
OP=occupational physician

Discussion

In this study we found that adherence to the Dutch 'Mental Health Problems' guideline was significantly better in OPs who received a tailored guideline training compared to OPs who were exposed to traditional guideline dissemination. However, in both groups guideline adherence was low. Especially, OPs did not record that relapse prevention was addressed and they did not

have regular contact with the employer. Also, the recovery phase of the worker and symptoms of mental health problems were not noted. OPs did identify the problems workers face at work and at home and in most records a rapid first consultation was recorded (within 2 weeks after the 1st day of sick leave).

Overall we found that guideline adherence was poor. In previous studies [17, 18], adherence to the 'Mental Health Problems' guideline was also found to be not optimal. Although the results cannot be compared on the level of PIs, because the revised version of the guideline with a different content and different set of PIs was used, it shows that the uptake of the guideline has been problematic for several years.

Several explanations can be given for why we found low guideline adherence. First, an audit of medical records does not reveal what actually happens during the encounters between OP and worker. OPs might not register all their findings and activities in the record. Negative findings and routine activities may not have been registered systematically. Exceptions are the frequency of the contacts between OP and worker and OP and employer (i.e. continuity of care). Here, the OHS routinely lists the date of each consultation which rules out the possibility of inaccurate registration. Also, the PI criteria were developed to reflect the content of the guideline, but they might not adequately reflect what OPs perceive to be important and relevant to report. Secondly, many employers contract a minimum of services from their OHS (including service by OP). These tight contracts might be in conflict with guideline recommendations and may have obstructed OPs from adhering to some recommendations [32]. For example, PI 4.1 'relapse prevention' had one of the lowest performance rates. Possibly, OPs were restricted in scheduling a relapse prevention consultation because the contract did not cover consultations after full return to work. Besides these organizational constraints, OPs themselves also might not have made optimal use of their position to provide high quality occupational health care. From the analyses of the medical records low performance rates on treatment and guidance (PI 3.2) were found. Here, OPs did not act in accordance with the recovery process of the worker (i.e. not intervening when recovery stagnates). Particularly in more complex situations or in case of stagnation the medical record implied that OPs failed to act as a proactive case manager, e.g. interact with the worker, work system, and other care providers. Especially in these cases acting according to the guideline might result in better worker outcomes.

Although overall guideline adherence was poor, we did find that the guideline training resulted in an improvement of professional behavior. OPs who received the training reported stronger guideline adherence compared to their colleagues who had not received the training. In a previous study of Rebergen and colleagues [17], no effect of a three-day educational guideline course was found. The additional effect of the current intervention above traditional dissemination might be explained by various elements: 1) a peer-group training was used which is known to activate the pre-knowledge of participants, leads to high-quality learning groups, and can impart sustainable knowledge and performance change [33, 34]. In addition, people adopt

new information better through their trusted social networks [35]; 2) the training was practice-based and focused on barriers OPs perceived (knowledge-related, attitude-related and external barriers) when using the guideline recommendations in their own practice, which ensured covering relevant clinical topics. In addition, OPs themselves developed solutions that were tailored to the needs of the OPs and tested the solutions in practice using a plan-do-check-act approach [36]. 3) The 8 training sessions were spread over the course of one year, improving knowledge and allowing OPs to adopt a new working style and actually change their behavior. Using tailored implementation strategies in small interactive sessions is found to be effective in changing professional behaviour in other studies [37-39].

The training had most impact on knowledge and attitude related barriers, but external barriers remained [21]. The perceived external barriers were work-contextual barriers, such as a lack of time/work pressure, tight contracts between OHSs and employers, and conflicting policies of and a lack of collaboration with other parties (e.g. employer, other healthcare providers) [32]. The training did have impact on knowledge and attitudes, but external constraints might be too extensive and complex to be changed by a professional-directed intervention [21]. For example, for an individual OP it is difficult to change policy or influence the conditions of contracts. This might explain why we did not find an effect on Continuity of care (PI5), which involves the start of the first consultation, intervals between consultations and contact between OP and employer. Remaining external barriers may prevent actual adherence even though the OP *knows* what to do and *wants* to perform a certain behavior.

Strengths and limitations

A strength of this study is its randomized controlled design, which is rare in this field of research [40]. By using cluster randomization the risk of contamination between the intervention and control condition was low. We evaluated the use of the guideline in daily practice in two groups of OPs after the completion of a guideline training of 1 year. The risk for recording desired performance by the OP is minimal, since the data collection started 3.5 year after the OPs gave their consent. In addition, by means of a thorough development process a new set of PIs was developed for the revised version of the practice guideline. Assessing guideline adherence by an audit of medical records has its limitations and is a possible source of bias. OPs do not register all findings and activities in the medical records and thus record-evaluation might not represent actual guideline adherence. However, the method of auditing medical records is also a strength, since it hardly interferes with actual performance, in contrast to actual or video observation of consultations. To prevent interpretation bias all medical records were blindly assessed by two researchers independently and a third researcher in case no consensus was reached. From 22 out of 56 participating OPs medical recordings were not assessed because none of the workers guided by these OPs were included in the study, which might be a risk for selection bias. However, no significant differences were found between workers in the control and intervention group.

Conclusion

Our results support the idea that a tailored implementation strategy in small interactive sessions is an effective strategy to implement guidelines but has limited effect if external barriers continue to hinder guideline adherence. We found that the peer-group guideline training focusing on perceived barriers improved adherence to the Dutch 'Mental Health Problems' guideline. However, adherence to the guideline is still far from optimal and needs to improve to be able to guarantee high quality occupational health care. Future research should focus on implementation of interventions that target different levels (provider level, patient/worker level and organizational level) and should involve all relevant stakeholders who are committed to implementing guideline recommendations.

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Conflicts of interest

JvdK and ML were involved in the development of the NVAB guideline and do not receive fees for the use of the guideline. JvdK, MJ, and EB developed the guideline training for occupational physicians in this study and MJ was the trainer for this training. No fees were received for conducting the training. KvB, BT, DR and JvW declare that they have no competing interests.

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Chapter 6

Effect of an intervention to enhance guideline adherence of occupational physicians on return-to-work self-efficacy in workers sick-listed with common mental disorders

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Abstract

Background

Since a higher level of self-efficacy in common mental disorders is associated with earlier return-to-work (RTW), it is important to know if work related self-efficacy can be increased by occupational health care. The primary aim of this study was to evaluate whether an intervention to enhance guideline adherence of occupational physicians lead to an increase in RTW self-efficacy in workers three months later. The secondary aim was to evaluate whether the intervention modified the association between RTW self-efficacy and return-to-work three months later.

Methods

A total of 66 occupational physicians participated in the study. They were randomized into two groups; the intervention group received a training, the control group did not. The training aimed to enhance adherence to a mental health guideline that contained strategies that are supposed to enhance RTW self-efficacy. In 128 sick-listed workers guided by these occupational physicians, RTW self-efficacy, RTW, and personal, health-related and work-related variables were measured at baseline and three months later. Generalized linear mixed models analysis and linear mixed models analysis were used for the evaluations.

Results

In workers whose occupational physicians had received the training RTW self-efficacy increased significantly more than in workers whose occupational physicians had participated in the control group ($t = -2.626$, $p \leq .05$). Higher baseline RTW self-efficacy scores were significantly more often associated with full RTW than with no RTW three months later (OR 2.20, 95% CI 1.18-4.07), but the intervention did not affect this association.

Conclusions

This study showed that a training to enhance guideline adherence of occupational physicians leads to increased RTW self-efficacy in workers sick-listed with common mental disorders during the first months of sickness absence in a real-life occupational health care setting. This insight is helpful for optimizing the recovery and RTW process, and for understanding the role of RTW self-efficacy in this process.

Trial registration ISRCTN86605310

Background

Self-efficacy is an interesting factor to consider in the return-to-work (RTW) process of workers, because unlike other factors that predict RTW (e.g. age, gender) it can potentially be influenced. Self-efficacy is the individual's conviction that one has the ability to successfully perform a certain behavior [1]. According to Bandura's self-efficacy theory, enhancement of an individual's sense of self-efficacy is an essential mechanism of change [2]. Psychological interventions arising from this theory are based on the assumption that individuals who are seeking help have a low sense of self-efficacy. The main aim of this help should therefore be to restore self-efficacy. Most effective interventions to restore self-efficacy involve working on one or more of the five elements that construct beliefs that an individual has about his or her abilities: vicarious, imaginal, and performance experiences, verbal persuasion, and physiological and emotional states [2]. Of these five elements, performance experiences have been shown to be the most powerful. For example, success at a task or behavior strengthens self-efficacy expectations for that task or behavior [2].

Recent studies have shown that an individual's level of work related self-efficacy at the start of the sickness absence is an adequate predictor of time until actual RTW [3-5]. In seeking an understanding of how to facilitate the recovery and RTW process, many studies have tried to identify factors that influence the time until RTW for workers with mental health problems. Frequently identified factors that have been found to be related to later RTW are: depression, anxiety disorders, burnout, co-morbid mental health problems, older age, low education, history of previous sick leave, high job stress, reorganizational stress, threat of unemployment, and part time work [6-15]. Factors related to an earlier RTW include: higher self-efficacy, active problem-solving coping strategies, lower age, frequent communication with supervisor, and quality and continuity of occupational care [6, 8, 3, 16, 17]. With regard to gender, mixed outcomes have been found [6, 11, 12].

The Netherlands Society of Occupational Medicine developed a guideline entitled "The management of mental health problems of workers by occupational physicians" in 2001 and revised it in 2007 [18]. The recommendations and interventions that are included in this practice guideline for occupational physicians address a combination of four of the five elements that are supposed to restore self-efficacy according to the theory of Bandura. In general the use of evidence based guidelines is considered to be effective to improve the patient care [19, 20]. However, previous studies on the use of this Dutch guideline showed that despite their positive attitude towards this guideline, actual guideline adherence of occupational physicians was minimal [21, 22].

For a larger study aiming to enhance occupational physicians' adherence to this guideline, a training was developed. This training entails techniques for the OP to get grip on the elements and interventions that contribute to enhance work related self-efficacy in workers sick-listed with

common mental disorders. Sickness absence due to common mental disorders, such as depression, anxiety disorders, and adjustment disorders, is a problem in many Western countries [23]. Long-term sickness absence in particular leads to substantial individual suffering, and high societal and financial costs [24, 25]. The present study aimed to evaluate the effects of this intervention to enhance guideline adherence of occupational physicians on RTW self-efficacy and on the association between RTW self-efficacy and actual RTW.

Research questions

1) Does the intervention to enhance guideline adherence of occupational physicians lead to increased RTW self-efficacy in workers three months later, as compared to workers guided by occupational physicians who did not receive the training (i.e. care as usual)?

2) Does the intervention to enhance guideline adherence of occupational physicians modify the association between RTW self-efficacy of workers, as measured shortly after a first consultation with an occupational physician, and actual RTW status three months later?

Methods

Design and Procedure

This study was part of a larger study on the effectiveness of guideline-based care provided by occupational physicians on the recovery and RTW of workers with common mental disorders. A more elaborate description of the design and procedure of this study has been published elsewhere [26]. In this cluster randomized controlled trial, the participating occupational physicians were recruited from the sites of a large collaborating occupational health service in the southern part of the Netherlands. This occupational health service provided care for a wide variety of companies in wide range of sectors (e.g. health care, education, municipality, engineering, industry). The 66 occupational physicians participated on a voluntary basis and were randomly assigned either to an intervention group (32) or to a control group (34). One occupational physician decided not to participate before the start of the training. The remaining 31 occupational physicians attended all training sessions. After completing the training occupational physicians received educational credits.

Eligible workers were selected from the sick leave registration system of the occupational health service. All workers, aged 18-64, counselled and diagnosed with a mental health problem by to a participating occupational physician were invited to participate after their first consultation with the occupational physician. According to the guideline the first consultation is within two weeks after the first day of sickness absence and it is always within six weeks after the first day of the sickness absence in accordance with the Dutch Gatekeeper Improvement Act

[27]. Workers interested in participating in the study were screened by the researchers during a structured telephone questionnaire assessing the inclusion and exclusion criteria (e.g. age, current sickness absence, occupational physician). Workers who met the inclusion criteria were sent a baseline questionnaire shortly after the structured telephone questionnaire. For the purpose of this study, only data on RTW self-efficacy and additional variables relevant for RTW were used. Three months after the baseline questionnaire, workers received a second questionnaire to measure their RTW self-efficacy. Data on sickness absence and RTW were extracted by the collaborating occupational health service from its registration system, or were provided by the human resource management departments of participating companies. Three months after the first consultation of the worker with the occupational physician the status of RTW was measured based on the data of the collaborating occupational health service.

Approval was obtained from the Medical Research Ethics Committee of St. Elisabeth Hospital in Tilburg (MREC number 1162).

Intervention

Training to enhance guideline adherence of occupational physicians

The training was based on findings from the scientific implementation literature on how to enhance guideline adherence [28-30]. Specifically, the focus of the training was on overcoming the three main clusters of barriers to guideline adherence: lack of knowledge, negative attitudes, and practical barriers [31]. During the interactive training, small peer-learning groups of occupational physicians discussed the content of the guideline and to what extent this related to their own practice. During the eight sessions (divided over 12 months), they explored their own barriers for use of this guideline and exchanged ideas to overcome them. A trainer (MJ) guided this training by structuring the peer-group learning sessions, facilitating the discussion, and monitoring the progress. During this training, a Plan-Do-Check-Act approach was used [32]. The OPs learned about the content of the guideline, identified barriers that prevented them from using the guideline, found solutions to overcome these barriers, tried out these solutions in daily occupational practice, and evaluated the tested solutions, and if needed adapted the solutions until they were useful for practice. Occupational physicians in the control group received no training and provided care as usual [26].

The training was provided as planned [Joosen et al., submitted, unpublished observations]. A pre- and posttest difference indicated that the self-reported guideline adherence of the participating occupational physicians (n = 31) had significantly improved, and 14 months after the end of the training this improved self-reported guideline adherence stayed constant. Also the number of physicians that reported good adherence to the guideline improved considerably after the training.

Content of the guideline

In summary, the guideline includes four consecutive steps [26]. The first step is one of problem orientation and diagnosis. The occupational physician sees the employee shortly after the first day of sick leave (within the first 2 weeks). A simplified classification that classified mental health problems in four categories was introduced: a) stress-related complaints (such as adjustment disorders), b) depression, c) anxiety disorder, and d) other psychiatric disorders. The occupational physician provides a diagnosis. If necessary the occupational physician contacts the general practitioner and refers the worker to a psychologist, psychiatrist or other professional for treatment. Furthermore, the problem inventory focuses both factors related to the worker and the work environment as well as the interaction between these two.

During the second step, called the intervention phase, the occupational physician evaluates the process of recovery in which the problem solving capacity of the sick-listed worker has to be monitored and enhanced. First, the occupational physician provides the worker with information about the recovery process and what is needed for recovery to enhance understanding and acceptance before starting to solve the problems. When recovery stagnates, the occupational physicians uses cognitive behavioural techniques to enhance the problem-solving capacity of the worker and follows the three phase model of the stress inoculation training [33]. The occupational physician uses a variety of techniques based on cognitive behavioral and problem solving therapy that are expected to increase self-efficacy, such as verbal persuasion, imaginal experiences, physiological and emotional experiences and performance experiences. For instance by providing information on mental health problems and their recovery process, stimulating the worker to talk about their problems with others, positively re-labeling the situation, providing assignments that help to structure problems and worries, and providing assignments addressing symptoms, emotions and life style. All these interventions are expected to contribute to the acceptance, recovery, readiness to solve problems, and to a first step in restoring the self-efficacy of the worker. After the crisis phase has become manageable, the occupational physician encourages the worker to invent the factors that obstruct the performance of work tasks, such as factors related to the worker and to the work environment, and to the interaction between both. Finally, the occupational physician encourages the worker to find solutions to solve these problems and to practice these solutions during the recovery process [18]. For example by providing the assignment to make a list of stressors described in concrete (problem) situations and to prioritize in order to solve them, and providing the assignment to make two RTW plans (one easily achievable and one more ambitious) and think through the prerequisites needed to achieve these plans. These assignments are expected to contribute to a sense of increased manageability, an increased problem solving capacity, positive experiences and to a sense of increased self-efficacy.

The third step of the guideline focuses on relapse prevention: integration of relapse prevention from the first contact with the worker by enhancing the problem-solving capacity of

the worker. According to the fourth step, a process based evaluation is made: during follow-up meetings evaluation of the recovery process includes the perspectives of the worker, supervisor, and other professionals. Follow-up consultations with the worker takes place every 3 weeks during the first 3 months, and then every 6 weeks thereafter. The occupational physician contacts the supervisor or work environment once a month.

Measures

RTW self-efficacy was measured at baseline and three months later by the RTW self-efficacy scale for workers with mental problems [4]. The RTW self-efficacy scale is a self-report questionnaire that contains 11 statements about the reporting worker's job. The worker is asked to imagine that he or she would start working his or her full contract again tomorrow. This is followed by statements such as: "I will be able to perform my tasks at work," "I will be able to deal with emotionally demanding situations," and "I will be able to cope with work pressure." Response categories range from "totally disagree" to "totally agree," over a six-point scale. The mean score across the 11 items represents the RTW self-efficacy total score. Higher RTW self-efficacy scores indicate higher self-efficacy with regard to RTW. The range of the scale's Cronbach's alphas has been shown to be from 0.90 to 0.96 across samples [4], and the RTW self-efficacy scale has been shown to be predictive of an actual RTW within three months [4]. According to the developers of the instrument it can be used over the course of the RTW process, even after workers have fully returned to work [4].

RTW status three months after the first consultation of the worker with the occupational physicians was measured with data extracted from the registration system of the occupational health service. Here, the worker was given the status of full RTW, partial RTW, or no RTW. Full RTW was defined as working the same hours as prior to the sickness absence. Partial RTW was defined as working fewer hours than prior to the sickness absence.

Common mental health symptoms were measured at baseline by the Four-Dimensional Symptoms Questionnaire (4DSQ), a self-report questionnaire that measures the four dimensions of common mental health symptoms: distress, depression, anxiety, and somatization. The 4DSQ consists of 50 items (each scored on a 5-point scale) and refers to symptoms experienced during the past week. The 4DSQ has been shown to be a reliable and valid instrument [34]. The Cronbach's alphas for each of the four dimensions ranged from 0.84 to 0.90 [34].

Burnout symptoms were measured at baseline by the Utrecht Burnout Scale–General Survey (UBOS), which is the Dutch version of the Maslach Burnout Inventory (MBI). The UBOS is a self-report questionnaire that measures work-related emotional exhaustion, mental distance, and competence. Higher scores on exhaustion and distance and lower scores on competence indicate burnout. The UBOS has been shown to be a reliable and valid instrument [35].

Coping was measured at baseline using the shortened 14-item version of the Utrecht Coping List (UCL), a self-report questionnaire that measures coping style on a 4-point scale. The 14-item version assesses the following dimensions: 1) active problem-focused coping, 2) emotional coping, and 3) looking for distraction and decreasing tension [36].

Psychological job demands, decision latitude, social support (from supervisor and from colleagues), and job insecurity were measured at baseline using the Dutch version of the Job Content Questionnaire (JCQ), a self-report questionnaire that measures the social and psychological characteristics of jobs. The dimensions of the JCQ have been shown to have a moderate to good reliability [37].

The following personal characteristics were assessed during the telephone questionnaire: age, gender, education level (low, middle, or high) [38], and number of working hours per week.

Data analysis

All analyses were performed with SPSS version 19.0. Descriptive statistics were used to describe the baseline characteristics of the workers.

Does the intervention lead to increased RTW self-efficacy in workers?

In order to test for possible differences in RTW self-efficacy at baseline between the two groups, an unpaired t-test was performed. A linear mixed models analysis was used to evaluate whether the intervention lead to increased RTW self-efficacy three months later taking into account that having established full RTW could be related to a higher RTW self-efficacy score after three months. The data file was restructured for this analysis, and repeated measures within linear mixed models were used to evaluate the change in RTW self-efficacy between baseline and three months later. The intervention, the measurements and RTW status were added as fixed factors to the model. Moreover, the interaction effects between intervention and measurements and between RTW status, intervention and measurements were added to evaluate whether the change in RTW self-efficacy differs for the control and the intervention group, and whether RTW status influences the change in RTW self-efficacy modified by the intervention. In case RTW status did not have an interaction effect on the change in RTW self-efficacy, the interaction term with RTW status was removed from the model. In case RTW status did not influence RTW self-efficacy, RTW status was removed from the model. The Akaike information criterion was used to test whether it was necessary to control for the multilevel effect of the occupational physicians. The model with the smallest Akaike information criterion represents the best-fitting model, so this model was used [39]. Glass' delta effect size was calculated to gain insight into the impact of the effect found.

Does the intervention modify the association between RTW self-efficacy and RTW status?
Multinomial logistic regression within a generalized linear mixed models analysis was used to evaluate whether the intervention modified the association between RTW self-efficacy at baseline and actual RTW status three months after the first consultation with the occupational physician. In the analysis, "No RTW" was used as the reference category, so both "Full RTW" and "Partial RTW" were compared to the "No RTW" category. The intervention and RTW self-efficacy were added as fixed factors to the model. Moreover, the interaction between intervention and RTW self-efficacy was added to test whether the effect of RTW self-efficacy on RTW status depends on belonging to the intervention group or the control group. The Akaike information criterion was used to test whether it was necessary to control for the multilevel effect of the occupational physicians. The model with the smallest Akaike information criterion represents the best-fitting model, so this model was used [39]. Univariate multinomial logistic regression analysis was used to test for potential confounding factors (age, gender, education level, sick leave history, active problem-focused coping, emotional coping, looking for distraction and decreasing tension, distress, depression, anxiety, somatization, burnout, decision latitude, psychological job demands, social support, and job insecurity) and select those that had an association with the dependent variable RTW ($p \leq .05$). If an association was found, the potential confounding factor was tested for association with the independent variable RTW self-efficacy ($p \leq .05$). If the potential confounding factor had an association with both the independent and the dependent variable, it was considered to be a confounding factor for the association between RTW self-efficacy and RTW and was added to the model.

Results

Study population

In total, 128 workers participated in this study. Their baseline characteristics are presented in Table 1. Sixty percent of the participating workers were female. About two-thirds of the workers were highly educated. The mean number of contracted working hours was 32 hours a week. On average, workers had moderately increased distress complaints. Overall 28.9% of the workers fully returned to their work and 22.3% of the workers returned partially three months after the first consultation with the OP. Table 2 presents the RTW self-efficacy means per RTW status in the intervention group and in the control group.

Table 1 – Baseline characteristics of workers

Characteristic	**n**	**Mean (SD) or %**	
Age	128	46.4	(10.8)
Gender, male	128	39.8	
Education level	128		
Low		6.3	
Medium		27.3	
High		66.4	
RTW self-efficacy (range 1-6) [1]	119	3.4	(0.8)
UCL *(Utrecht Coping List)*			
Problem-focused coping (range 5-20) [1]	122	14.2	(2.9)
Emotional coping (range 5-20) [1]	123	11.0	(2.7)
Distraction (range 4-16) [1]	122	8.5	(2.2)
4DSQ (*Four-Dimensional Symptom Questionnaire)*			
Distress (range 0-32) [1]	121	18.0	(9.4)
Depression (range 0-12) [1]	123	2.7	(3.6)
Anxiety (range 0-24) [1]	121	5.1	(5.2)
Somatization (range 0-32) [1]	119	9.3	(6.4)
UBOS *(Utrecht Burnout Scale–General Survey)*			
Burnout exhaustion (range 0-6) [1]	123	3.9	(1.7)
Burnout distance (range 0-6) [1]	123	2.8	(1.7)
Burnout competence (range 0-6) [1]	123	3.8	(1.3)
JCQ *(Job Content Questionnaire)*			
Psychological job demands (range 12-48) [1]	120	33.1	(5.7)
Social support (range 8-32) [1]	120	22.2	(4.0)
Decision latitude (range 24-144) [1]	123	69.9	(8.5)
Job insecurity (range 3-9) [1]	119	8.0	(0.8)

[1]*Higher scores indicate a greater presence of the named factor*

Table 2 – RTW-SE means per group per RTW status

		RTW-SE Intervention group					RTW-SE Control group			
		Baseline		3 months			Baseline		3 months	
		(n = 58)		(n = 54)			(n = 61)		(n = 61)	
RTW status	**%**	**Mean**	**SD**	**Mean**	**SD**	**%**	**Mean**	**SD**	**Mean**	**SD**
Full RTW	32.3	3.65	0.96	4.15	0.63	27.7	3.67	0.51	4.09	0.45
Partial RTW	15.3	3.09	0.68	3.74	0.66	30.8	3.61	0.68	3.87	0.76
No RTW	52.5	3.09	0.61	3.55	0.52	41.5	3.33	1.00	3.50	1.03

RTW: return-to-work
RTW-SE: return-to-work self-efficacy

Does the intervention lead to increased RTW self-efficacy in workers?

An unpaired t-test demonstrated that the difference in mean RTW self-efficacy score at baseline between both groups was not significant ($t = -1.62$, $p > .05$). The model without control for the multilevel effect was found to be the best fitting and was therefore used in the analysis. The results of the linear mixed models analysis are presented in Table 3. In workers in the intervention group, the mean RTW self-efficacy score at baseline was 3.3, which increased by 15% three months later. In workers who received care as usual, the mean RTW self-efficacy score at baseline was 3.6, which increased by 6% three months later. The interaction effect between RTW status, intervention and measurements was not significant ($p \geq .05$) and was therefore removed from the model. There was a significant difference in the RTW self-efficacy score between the group with full RTW and the group with no RTW ($t = 3.431$, $p \leq .05$). Controlling for the RTW status, the intervention significantly increased the RTW self-efficacy in workers ($t = -2.626$, $p \leq .05$). The Glass' delta effect size of the increase of RTW self-efficacy by the intervention was 0.51.

Table 3 – Results of linear mixed models analysis with RTW-SE[1] and training[2]

	Intervention group				Control group				
	Baseline		3 months		Baseline		3 months		
	(n = 58)		(n = 54)		(n = 61)		(n = 61)		
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**P value** [3]
RTW-SE (range 1-6)	3.30	0.11	3.81	0.10	3.57	0.10	3.78	0.09	0.010*

RTW-SE: return-to-work self-efficacy [1]*RTW-SE is the dependent variable* [2]*Training is the independent variable* [3]*P value of the interactive effect of training to the difference between both groups in RTW-SE increases * significant at p ≤ 0.05*

Does the intervention modify the association between RTW self-efficacy and RTW status?

The model without control for the multilevel effect was found to be the best fitting and was therefore used in the analysis. Table 4 shows the results of the generalized linear mixed models analysis, with RTW as the dependent variable, and RTW self-efficacy as the independent variable. A significant association was found between workers' RTW self-efficacy scores and a full RTW status ($t = 2.52$, $p \leq .05$). Compared to workers with lower RTW self-efficacy scores at baseline, workers with higher RTW self-efficacy scores experienced a full RTW three months later significantly more often than they experienced no RTW (OR 2.20, 95% CI 1.18-4.07). No significant association was found between RTW self-efficacy scores at baseline and a partial RTW three months later. The intervention did not have a modifying effect on the association between RTW self-efficacy baseline and a full RTW. Because the only significant association that was found was between RTW self-efficacy and full RTW, the test for potential confounding factors was performed only for full RTW. None of the tested variables (age, gender, education level, sick leave history, active problem-focused coping, emotional coping, looking for distraction and decreasing tension, distress, depression, anxiety, somatization, burnout, decision latitude, psychological job demands, social support, or job insecurity) caused confounding of the association between RTW self-efficacy baseline and full RTW (data not shown).

Table 4 – Results of generalized linear mixed models analysis for the associations between RTW-SE[1] and RTW[2] (n = 116)

	Full RTW			Partial RTW		
Predictor	**OR**	**95% CI for OR**	**P value**	**OR**	**95% CI for OR**	**P value**
RTW-SE	2.20	1.18 – 4.07	0.013*	1.56	0.82 – 2.98	0.174

Reference category: no RTW *RTW-SE: return-to-work self-efficacy; RTW: return-to-work* [1]*RTW-SE at baseline* [2]*RTW three months after the first consultation with the OP * significant at p ≤ 0.05*

Discussion

To our knowledge, this is the first study showing that RTW self-efficacy in sick listed workers can be positively influenced during the first months of sickness absence in a real-life occupational health care setting. The present study showed that the RTW self-efficacy in workers was significantly increased by the intervention, and that RTW status did not influence the increase of RTW self-efficacy. Furthermore, the intervention did not influence the predictive association between the level of RTW self-efficacy at baseline in workers with common mental disorders and RTW status three months after the start of occupational health care. Workers with higher RTW self-efficacy scores at baseline experienced a full RTW significantly more often than did workers

with lower RTW self-efficacy baseline scores. Personal factors, mental health factors, or work-related factors at baseline did not influence this association.

The association found between RTW self-efficacy at baseline and actual full RTW three months after the first consultation with an occupational physician is consistent with the findings of previous studies concerning the predictive value of RTW self-efficacy for full RTW [3-5]. In contrast to the findings of Lagerveld and colleagues [4], no association between RTW self-efficacy and a partial RTW was found. However, the mean overall RTW self-efficacy scores at baseline were higher in Lagerveld's study than they were in the present study (3.8 vs. 3.4). Since the workers in Lagerveld's study had higher RTW self-efficacy scores at baseline, which is indicative of an earlier RTW, the workers in that study were probably already partially at work three months later, while the workers in our study were still on sick leave at that time. So, this difference in results regarding partial RTW might be explained by the difference in baseline scores. Another explanation for not finding an association between RTW self-efficacy and partial RTW might be a lack of power. Although 22% of the workers experienced partial RTW, 128 participating workers in our sample might be too little to find an association between RTW self-efficacy and partial RTW.

In contrast with other studies, the present study found that the intervention significantly influenced the increase of RTW self-efficacy over time. Other studies [40, 41] also found a significant increase of RTW self-efficacy over time but this was not caused by the interventions for occupational professionals to guide workers with mental health problems used in these studies. These interventions also concern some kind of problem inventory by the worker making a problem solving plan [40] and/or reintegration plan by the worker [41], homework assignments for the worker [40] and guidance by an occupational physician [40] or an occupational therapist [41]. Unlike the current study one of the other interventions contained group meetings for the workers as well as individual consultations, and roll play experiences for the workers [41]. However, there was one study that also found that the intervention significantly increased RTW self-efficacy, but this intervention was a training for workers with a chronic physical disease [42]. Therefore, this intervention is less comparable to the interventions including a training for occupational health professionals to guide workers with mental health problems in the other studies. Considering these contradictory findings, it seems not easy to influence self-efficacy by the guidance of occupational health care providers. Therefore, more research on innovative interventions is needed to explore the ways in which RTW self-efficacy could be positively influenced.

Based on Bandura's self-efficacy theory [2], we expected that guidance provided according to the Dutch practice guideline for occupational physicians would contribute to an increase in RTW self-efficacy in workers with common mental disorders. This study showed that the intervention to enhance the guideline-based care provided by occupational physicians

significantly increased RTW self-efficacy, as compared to care as usual. The elements in this guideline that contain strategies that are supposed to enhance RTW self-efficacy may indeed have contributed to the increase in RTW self-efficacy in workers with common mental disorders. These findings endorse the potential utility of measuring and seeking to increase RTW self-efficacy in the recovery and RTW process, and could be taken into account by occupational health care providers as they provide guidance to workers with common mental disorders.

Since RTW self-efficacy was only measured at baseline and three months later, we were not able to study the exact course of any changes in RTW self-efficacy within the first three months. It would be worthwhile to evaluate this short-term course of RTW self-efficacy levels and the potential influence exerted by occupational health care, since this can contribute to more knowledge about what happens early in the RTW process and about what might be useful in obtaining an earlier RTW. It would also be worthwhile to evaluate the long-term course of RTW self-efficacy levels and other factors related to an (earlier) RTW, as well as the influence of the training on the development of RTW self-efficacy and other factors related to RTW over time.

A limitation of this study was that RTW self-efficacy was measured after the first consultation with the occupational physician, so workers' RTW self-efficacy scores could already have been influenced by the guidance of their occupational physicians. Due to the participant enrollment process, workers could only be invited and included in the study after their first consultation with an occupational physician [26]. The first consultation included problem orientation, diagnosis, providing information about the recovery process, and if necessary some initial interventions which could contain elements that were supposed to restore self-efficacy. The first questionnaire was filled out by the worker as soon as possible after his or her first consultation with the occupational physicians. However, measuring RTW self-efficacy some weeks after the start of the sickness absence is comparable to the methods of other studies [4, 5], and was the same for both groups. Nevertheless, RTW self-efficacy at baseline was significantly associated with the occurrence of an actual full RTW, and the intervention significantly influenced increases in RTW self-efficacy over time.

An important limitation of this study was that no objective information was available about the actual guideline adherence of occupational physicians after the training. The occupational physicians were randomly assigned to the intervention group or to the control group through which the influence of other factors on the increase of RTW self-efficacy was not obvious. Although the self-reported guideline adherence by the occupational physicians indicated that their guideline adherence was significantly improved after the training [Joosen et al., submitted, unpublished observations] and self-report measures are highly common in research, objective measures would be preferable and should be used in future research. Therefore, in current study it was not possible to point out which components of the intervention or the provided care contributed to the increases in RTW self-efficacy over time. More research

on this important aspect will be needed to learn more about which parts of the guideline and the interventions that influence the recovery and RTW process.

Another limitation of this study was that only those occupational physicians and workers who were willing to participate in the study were included. Probably only occupational physicians who were most eager to improve their guidance of workers with common mental disorders or occupational physicians who were in need of educational credits applied to participate in this study. This might have caused selection bias. Nevertheless, the intervention significantly influenced increases in RTW self-efficacy over time.

This study shows that RTW self-efficacy can be influenced in a real-life Dutch occupational health care setting. Since occupational health care is organized differently in different countries [43], more research is needed to evaluate whether RTW self-efficacy can be influenced in other settings.

Conclusions

This study contributes to the understanding of the role of RTW self-efficacy in the recovery and RTW process. Since measuring RTW self-efficacy was found to be useful in detecting workers who were at risk for long-term sickness absence in several studies, measured RTW self-efficacy levels can be used to direct the guidance that is offered in the recovery and RTW process. The findings of this study suggest that levels of RTW self-efficacy can be increased during the first months after the start of sick leave with the use of occupational health care, which contains strategies that are supposed to enhance RTW self-efficacy in workers with common mental disorders. This insight contributes to the optimization of the recovery and RTW process and to the development of interventions within occupational health care and guidance.

List of abbreviations

RTW: return-to-work
ICD-10: International Classification of Diseases version 10
4DSQ: Four Dimensional Symptom Questionnaire
UBOS: Utrecht Burnout Scale–General Survey
UCL: Utrecht Coping List
JCQ: Job Content Questionnaire

Competing interests

JvdK was manager and main author in the development of the NVAB guideline. JvdK does not receive fees for the use of the guideline.
KvB, EB, MJ, JM, BT, and JvW declare that they have no conflicts of interest.

Authors' contributions

KvB, JvdK, EB, MJ, BT, and JvW contributed to the conception and design of the study. JM and KvB performed the statistical analyses. KvB also performed the data collection and wrote the manuscript. KvB, JvdK, EB, MJ, JM, BT, and JvW revised and commented on the manuscript. All authors read and approved the final manuscript.

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Chapter 7

Effectiveness of an intervention to enhance occupational physicians' guideline adherence on sickness absence duration in workers with common mental disorders: a cluster-randomized controlled trial

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Abstract

Purpose

Evidence-based guidelines in occupational health care improve the quality of care and may reduce sickness absence duration. Notwithstanding that, guideline adherence of occupational physicians (OPs) is limited. Based on the literature on guideline implementation, an intervention was developed that was shown to effectively improve self-reported adherence in OPs. The aim of present study was to evaluate whether this intervention leads to earlier return to work (RTW) in workers with common mental disorders (CMD).

Methods

In a two-armed cluster randomized controlled trial, 66 OPs were randomized. The trial included 3379 workers, with 1493 in the intervention group and 1886 in the control group. The outcome measures were: time to full RTW, time to first RTW, and total hours of sickness absence. Cox regression analyses and generalized linear mixed model analyses were used for the evaluations.

Results

The median time to RTW was 154 days among the 3228 workers with CMD. No significant differences occurred in (time to) full RTW between intervention and control group HR 0.96 (95% CI 0.81 – 1.15) nor for first RTW HR 0.96 (95% CI 0.80 – 1.15). The mean total hours of sickness absence was 478 hours in the intervention group and 483 hours in the control group.

Conclusions

The intervention to enhance OPs' guideline adherence did not lead to earlier RTW in workers with CMD guided by the OPs. Possible explanations are the remaining external barriers for guideline use, and that perceived guideline adherence might not represent actual guideline adherence and improved care.

Introduction

As in many Western countries, in the Netherlands, sickness absence due to common mental disorders (CMD) is a problem that is associated with individual suffering and high costs for employers and society [1-3]. To improve the quality of occupational care, the Netherlands Society of Occupational Medicine (NVAB) developed (2000) and revised (2007) an evidence-based practice guideline named "Management of mental health problems of workers by occupational physicians" [4, 5]. Several studies have since been conducted on the effect of interventions aiming to improve the use of this guideline by occupational physicians (OPs) on workers outcomes. The first study, by Van der Klink et al., showed positive effects on the time to return to work (RTW); in this study, the occupational physicians were compliant with the intervention [6]. In a retrospective study, researchers found that closer adherence to this guideline was associated with shortened sickness absence in workers with adjustment disorders [7]. In addition, Rebergen et al. found that OPs actual adherence to the guideline was limited, despite the fact that they had a positive attitude about using this guideline [8-10]. Apparently, implementing this guideline in practice is still challenging.

To improve adherence to this guideline, we developed a tailored implementation strategy based on findings from scientific implementation literature on how to improve guideline adherence [11-15]. According to the literature, more active implementation strategies are needed [12, 13] rather than dissemination among professionals and short introductions. Preferably, these active implementation strategies are tailored for a specific target group and setting, and they intend to eliminate perceived barriers that hinder physicians from using guidelines [11, 14, 16]. Moreover, to successfully overcome barriers for guideline use, the target users of a guideline should be actively involved in identifying barriers for specific guideline recommendations and selecting solutions [15]. In line with this aim, we developed an intervention to enhance OPs' guideline adherence, focusing on identifying and solving the barriers for applying this guideline's key recommendations. This intervention showed to be feasible in practice and effective in enhancing OPs' knowledge, attitudes, perceived skills, and perceived guideline adherence; however, their perceived external barriers remained [17].

In the present cluster randomized controlled trial (RCT), we evaluated the tailored intervention to see whether it led to earlier and sustained RTW in workers who were sick-listed due to CMD compared to those receiving usual care. Specifically, we formulated the following research questions: What is the effect of the intervention aimed to enhance OPs' guideline adherence on 1) the time to full RTW, 2) the time to first RTW in workers sick-listed due to CMD, 3) the total hours of sickness absence during a one year period after the start of the sickness absence?

Methods

In the present paper, the "CONSORT 2010 statement: extension to cluster randomized controlled trials" [18] was used for reporting. A detailed description of the study protocol [19] and the intervention for OPs have been reported elsewhere [17].

Study context

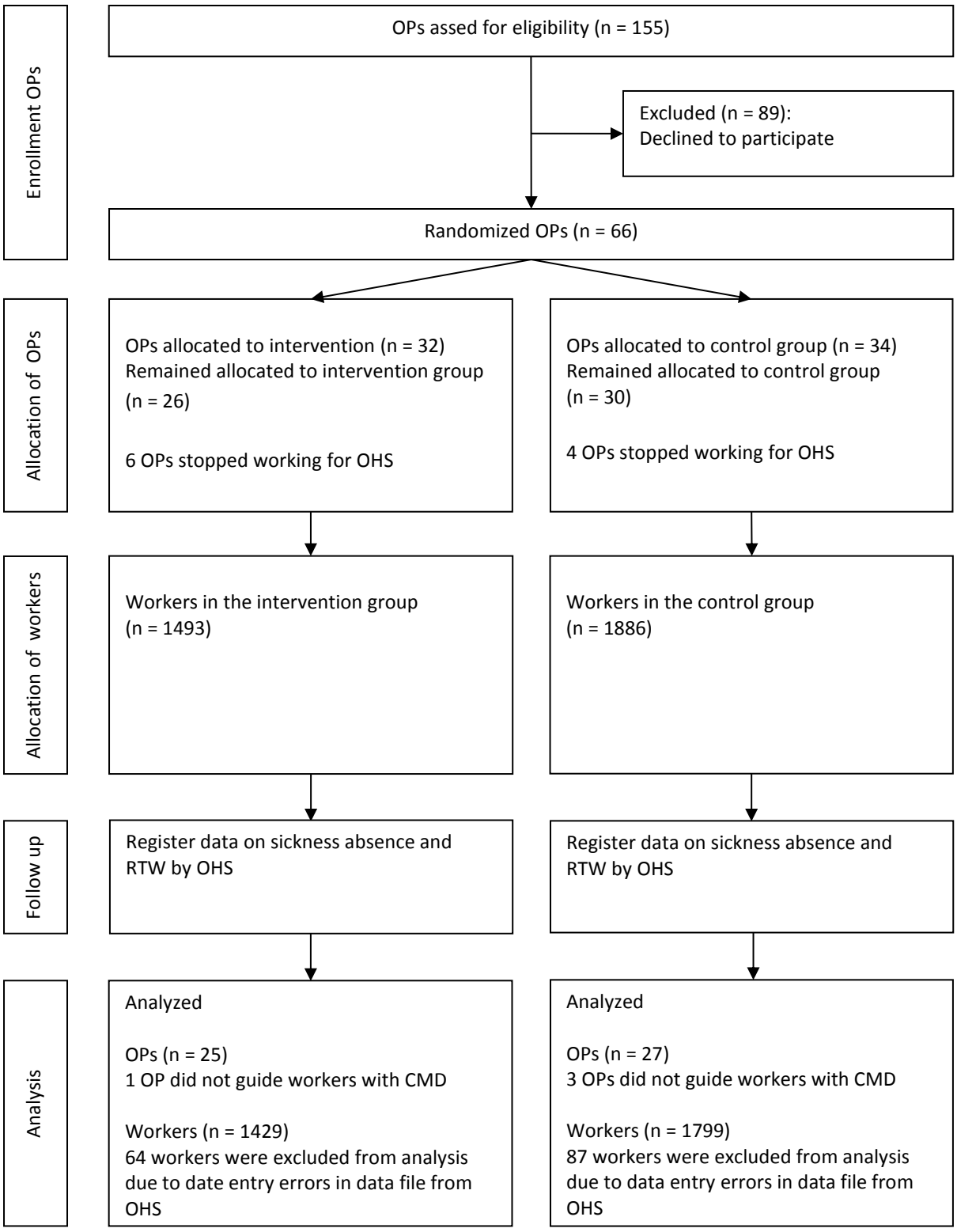
According to the Dutch Gatekeeper Improvement Act, in case of sickness absence, both employer and worker are responsible for the recovery and return to work of the sick listed worker [20]. The employer is obliged to pay at least 70% of the wage during the sickness absence of a worker for a period of two years and to provide occupational health care. Sick listed workers have to consult an OP for diagnosis, assessment of the workability, and guidance within the first 6 weeks of the recovery and return to work process [20]. The OP has to manage this process with workers and their employer and supervisor.

Trial design

This study was designed as a two-armed cluster RCT with randomization at the level of the OP (Figure 1).

The OPs were randomly allocated to the intervention group or to the control group. After completion of the one year intervention for the OPs, the registration of data on sickness absences and workers' RTW was started from January 1st, 2012 until February 28th, 2014. The data were routinely recorded by the occupational health service (OHS) in their registration system, and for this study the data were extracted by the OHS from their registration system. The data provided to us were not traceable to the individual workers.

We obtained approval from the Medical Research Ethics Committee of St. Elisabeth Hospital in Tilburg, The Netherlands. This study was registered in the ISTCTN trial register, ISRCTN86605310.



OP: Occupational physician; OHS: Occupational Health Service; RTW: Return to work; CMD: Common Mental Disorders

Figure 1 - Flow diagram of this study

Participants

Occupational physicians

OPs were recruited between October 2010 and January 2011 from sites of a large OHS in the Netherlands. All 155 OPs of the sites in the Southern part of The Netherlands received written and oral information about the study. The 66 OPs participated on a voluntary basis and signed informed consents. After completing the intervention, the OPs in the intervention group received educational credits.

Workers

Eligible workers were between 18 and 64 years old, and had a first period of sickness absence between January 1st, 2012 and January 15th, 2013. All workers were receiving guidance by an OP who participated in the study and who had diagnosed the worker as having CMD (according to the Dutch Classification of Diseases, based on the ICD-10) [21]. The companies that workers were employed at, varied in size and served different sectors.

Intervention

Intervention group

Workers in the intervention group received guidance from an OP who had received the intervention to enhance OPs' guideline adherence. A detailed description of this intervention has been published elsewhere [17]. In short, this intervention consists of an eight-session training in small peer-learning groups, takes place over 12 months, and is focused on barriers that hindered OPs from using specific recommendations in this guideline in practice. According to the model of Cabana et al. [22], guideline adherence can be affected by three main clusters of barriers: 1) lack of knowledge, 2) negative attitudes, and 3) external barriers. The OPs exchanged ideas and solutions to overcome the perceived barriers, drew up joint action plans on how to implement these solutions in their daily practice, and tested the suggested solutions in daily practice [17, 19].

Regarding the guideline content, the overall role of the OP is to monitor the process of sickness absence and RTW, to facilitate communication between workers and their employer and supervisor, to provide information and advice to the employer, supervisor, human resource management, and co-workers on how to support the worker and enhance his or her recovery and RTW, and to intervene in case of stagnation, either by OPs' own interventions or by referral to a mental health specialist. According to the guideline, the guidance of a worker who is sick-listed with CMD starts with a problem orientation and an OP's diagnosis. Next, the OP evaluates the worker's recovery and RTW process by monitoring and enhancing the worker's problem solving capacity according to the three phase model of Meichenbaum [23]. If the recovery process stagnates, the OP uses cognitive behavioral techniques to enhance the worker's problem-solving capacity. Consultations with the worker take place every three weeks during the

first three months, and then every six weeks thereafter. The OP contacts the supervisor or employer once a month [4, 24]. A detailed description of the content of the guideline has been reported elsewhere [17, 19, 25].

Control group

As the guideline was distributed among Dutch OPs and became part of their medical education, guideline-based care came to be seen as usual care. However, subsequent research has shown that actual adherence to this guideline was limited [7-10]; therefore, in this study, care as usual was the guidance received by workers in the control group.

Outcomes

The focus of the present study was on outcomes at the level of the workers. Workers' personal baseline characteristics (age, gender, number of contract working hours per week), and data on sickness absence and RTW were extracted from the OHS registration system.

Primary outcome

The time to the CMD workers' full RTW was calculated as the number of calendar days between the first day of sickness absence and the first day of full RTW. Working the number of hours of their employment contract, for at least four weeks was considered a full RTW. The calculated time until full RTW was based on the data extracted from the OHS registration system.

Secondary outcomes

Two secondary outcomes were assessed, i.e. time to first RTW and the total number of sick-leave hours. The time to the first RTW was calculated as the number of calendar days between the first day of sickness absence and the first day of RTW, irrespective of the number of working hours resumed in a week and the duration of this period. The total number of sick leave hours was calculated over a one-year period, taking into account the total hours of their employment contract and partial RTW.

Sample size

We performed a power analysis to determine the sample size needed to detect a difference between the control and the intervention group with respect to the time to the CMD workers' full RTW (primary outcome) and calculated the need to include a total of 232 workers. (A detailed description of the performed sample size was published elsewhere [19].) Despite considerable efforts the recruitment of a representative group of workers was difficult for several reasons, e.g. employers gave no permission to invite their workers for the study or eligible workers were too tired to want to participate. Because recruitment resulted in too small a sample size, we subsequently used the anonymized sickness absence and RTW data of all 3379 workers sick listed

due to CMD, who were guided by participating OPs during the study period. These data had already been recorded in the OHS registration system. This way, resulted in an unbiased and much larger data set. A consequence of using the anonymized data of 3379 workers was the limited number of available baseline characteristics, such as diagnosis, severity of CMD, aspects related to the work context, and treatment by other (mental) health care professionals that preferably would have been taken into account as possible confounders or effect modifiers in the analyses. The data of the 128 recruited workers will be used in other evaluations, separate from the current paper.

Randomization

After recruitment, OPs were randomized by computerized allocation to the intervention or to the control group. The allocation was communicated to the OPs after the randomization of all participating OPs. Workers were allocated to the same group as their OP.

Blinding

Workers and their companies were blinded for randomization since they were not aware of the allocation of their OP. The data collector who extracted the data from the registration system at the OHS and the researcher who assessed the survival outcomes (MdB) were also blinded for allocation of the OPs and of the workers to the intervention or to the control group. OPs were not informed about the inclusion of the workers they guided.

Statistical methods

Time until full RTW and time until first RTW

To evaluate the effect of the intervention, we performed intention-to-treat analyses. To illustrate the differences between the intervention and control group, we generated Kaplan-Meier survival curves, but for practical reasons, did not account for the multilevel design. Cox regression analysis was used to compare the difference between the intervention and the control group on the (time until) full and first RTW. To correct for the cluster design, we used the frailty random effect in this analysis [26]. Cox regression models the logarithm of the ***incidence or hazard rate***, the number of new 'events' (i.e. RTW) per population 'at-risk' (i.e. sick-listed workers) per unit time. Workers were censored when the full RTW or the first RTW was not established within the follow up period (from the first day of sickness absence until February 28th 2014), or when the worker was lost to follow up within that period. The influence of baseline characteristics was evaluated using gender, age, and number of working hours as covariates in the model.

Total hours of sickness absence

To evaluate the total hours of workers' sickness absence, we used generalized linear mixed models analysis with inverse Gaussian distribution. The total hours of workers' sickness absence

was the dependent variable. Group (intervention of control group) was added as a fixed factor to the model.

Analyses were performed with R statistical program version 3.0.1. with the frailtypack [26] and SPSS version 19.0.

Results

Participant flow and baseline data

A total of 66 OPs participated. As can be seen in Figure 1, data of 3228 workers were analyzed, of which 280 workers did not establish full RTW and 214 workers did not establish first RTW within the follow up period. The mean follow up time was 595 days (SD 118) from first day of sick leave until February 28th 2014. Both groups contained more female than male workers. The number of contract working hours per week was comparable between both groups. See Table 1.

Table 1 – Baseline characteristics of the participants per group

	Intervention group			**Control group**		
	mean	**SD**	**%**	**mean**	**SD**	**%**
Worker characteristic	(n = 1429)			(n = 1799)		
Gender, male	.	.	39.5	.	.	43.3
Age	45.1	11.1	.	44,1	10.8	.
Number of contract working hours per week	29.8	10.7	.	30.6	10.3	.
Occupation physician characteristic	(n = 25)			(n = 27)		
Gender, male	.	.	65.4	.	.	81.5
Age	54.0	3.9	.	54.0	5.6	.

Outcomes

Time until full RTW

The differences in time to full RTW between the two groups are illustrated with the Kaplan-Meier survival curve, see Figure 2. The number of workers who established full RTW, and the mean and median time until full RTW, were comparable between both groups (see Table 2). The hazard ratio of the intervention compared to the control group was 0.96 (95% CI 0.81 – 1.15), indicating that workers in the intervention group and in the control group had the same likelihood of full RTW during the follow-up period. Adjustments for baseline characteristics (age, gender and number of contract working hours per week) yielded a comparable hazard ratio 0.97 (95% CI 0.82 – 1.16). As some workers had been treated by several different OPs (e.g. during holidays, or reorganizations), an additional analysis on workers guided by only one OP (n = 2796) was done, which showed a comparable hazard ratio of 0.99 (95% CI 0.81 – 1.20).

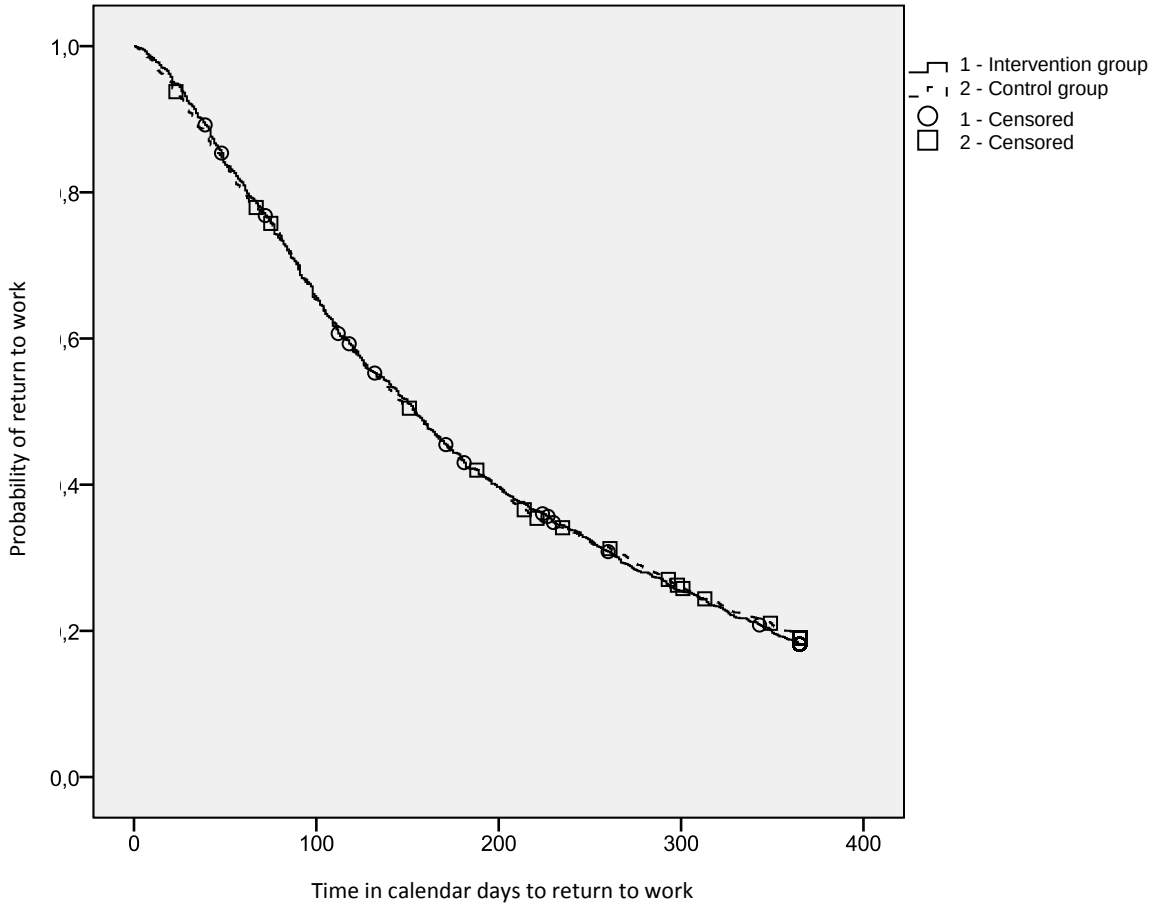


Figure 2 - Kaplan Meier curve time to full return to work

Time until first RTW

The mean and median time to first RTW and the number of workers who established their first RTW within one year after the start of the sickness absence were comparable in both groups (see Table 2). The hazard ratio of the intervention compared to the control group was 0.96 (95% CI 0.80 – 1.15), indicating that workers in the intervention group and in the control group had the same likelihood of having a first RTW during the follow-up period. Adjustments for baseline characteristics (age, gender, and number of contract working hours per week) yielded a comparable hazard ratio 0.96 (95% CI 0.80 – 1.15). An additional analysis on workers guided by only one OP (n = 2796) showed a comparable hazard ratio 1.01 (95% CI 0.84 – 1.22).

Total hours of sickness absence

The estimated mean for total hours of sickness absence was 478 (95% CI 425 - 530) in the intervention group and 483 (95% CI 436 – 531) in the control group (-5.51 (95% CI -76 – 65), p = .88).

Table 2 – Return to work outcomes per group

	Intervention group				Control group					
	(n = 1429)				(n = 1799)					
	%	**median**	**mean**	**SD**	**%**	**median**	**mean**	**SD**	**HR**	**95% CI**
Full RTW[a] after 12 months follow-up	81	.	.	.	81	.	.	.	.	.
Full RTW[a] total follow-up	91	.	.	.	89	.	.	.	.	.
Days to full RTW[a]	.	.	212	158	.	.	214	182	.	.
Days to full RTW[a]	.	154	.	.	.	154	.	.	0.96	0.81 – 1.15
First RTW[a] after 12 months follow-up	89	.	.	.	87	.	.	.	.	.
First RTW[a] total follow-up	93	.	.	.	91	.	.	.	.	.
Days to first RTW[a]	.	.	151	173	.	.	158	185	.	.
Days to first RTW[a]	.	91	.	.	.	93	.	.	0.96	0.80 – 1.15

a: RTW: return to work

Discussion

Although the intervention had shown to be effective in improving OPs' self-reported guideline adherence [17], the present study showed that it was not effective in reducing the sickness absence duration in workers with CMD. Moreover, no differences were found for the total hours of sickness absence due to CMD in the 12 months after the start of the sick leave.

There are various possible explanations. A first option is that, notwithstanding that we know from the feasibility study that the intervention was completed as planned and that the perceived guideline adherence improved [17], the factual provided care to the workers did not improve. A previous study has shown that self-reported guideline adherence is not an accurate measure of guideline adherence [27], and therefore OPs may have overestimated their own behavior. In addition to the current study, the effect of the intervention on OPs' actual adherence was evaluated, and some improvement of OPs' guideline adherence was found [Joosen et al., submitted]. Hence, it is possible that this small improvement did not lead to optimal guideline-based care by OPs.

Second, even if OPs' knowledge, attitude or even factual behavior did improve, this might not have led to real improvement because of remaining conditional external barriers [17]. During and after the training OPs perceived many conditional external barriers for guideline use, such as lack of time and lack of facilities to actually follow the guideline. For example, this was due to financial contracts between employers and OHS limiting the number of contacts between OP and worker, and the conflicting policy of and lack of collaboration with for example employer and other (mental) health care providers [28]. Besides, in general OPs experience a high increase of the OPs' workloads [29]. Although the intervention enhanced OPs' knowledge, attitudes, perceived skills, and perceived guideline adherence, it is possible that the remaining conditional external barriers, such as very limited time and possibilities to see the worker, prevented these positive effects to lead to an effective practice.

A third possible explanation is that the guideline in its present form is not effective, and workers need a different kind of guidance in order to return to their work earlier. However, a retrospective study [7] and a process evaluation of a randomized trial [10] showed several elements of the guideline to be significantly related to an earlier RTW [7]. Furthermore, the guideline recommendations are based on and supported by evidence from a variety of studies [6, 30, 31], such as regarding the fact that relapse prevention is important [32], which makes it unlikely that the guideline is not effective.

In combination with and in addition to the former point a fourth possible explanation is that the contrast between the intervention and the control groups may have been insufficient. A RCT does not reveal absolute effectiveness, but effectiveness relative to the control group. In our study all OPs were not only supposed to work according to the Dutch occupational health guideline, but also, since the introduction of this guideline, the idea has become common among Dutch OPs that earlier work resumption can contribute to recovery, which is a key

recommendation in the guideline. This was not yet the case in the late 1990s when the study of Van der Klink et al. [6] found their intervention to be effective. The deficiency to find an effect might thus reflect a lack of contrast relative to care as usual that changed considerably in the past 15 years in the Netherlands, rather than an absolute lack of efficiency of the guideline.

A combination of these factors may also be an explanation for the fact that, in spite of many years of research, it seems difficult to develop interventions that are successful in reducing the sickness absence duration in workers with mental health problems. The findings of this study add to a series of RCTs in which interventions were developed to reduce sickness absence duration in workers with CMD [33-36]. Most of these studies were conducted in The Netherlands, and the interventions were not effective in reducing workers' sickness absence duration [34-36]. In some previous studies implementation problems interfered with the developed interventions and as such also with the findings on the interventions' effectiveness [34, 36, 37]. Very few previous studies have found a positive effect on sickness absence duration [6, 30, 33]. In all these effective studies OPs could spend time on guidance and contacts with the company. The intervention in one of these studies focused both on occupational professionals and on workers [33], which contrasts with most other interventions that primarily focus on professionals. Moreover, remarkably, in most recent studies, the time to workers' RTW was long-lasting [34-36], which might reflect the growing experienced work pressure and demands by Dutch workers [38].

The present study has several strengths and limitations that need to be discussed. A strength of this study was the cluster RCT design, which limited the possibility of contamination between the intervention group and the control group. To prevent selection bias, the workers were selected from the registration system of the OHS after their first consultations with participating OPs. Another strength was the large sample size, of 3379 workers, which made it more likely to have reliable outcomes. The data on these workers were extracted from the OHS registration system to prevent recall bias which could occur in workers with CMD. The drawback of using the OHS registration system for data extraction, was the limited number of baseline characteristics available, such as specific diagnosis and severity, information about the work context, and treatment by other (mental) health care professionals. Preferably, these would have been used as possible confounders or possible effect modifiers in the analyses, providing better explanations for the findings. However, due to the randomized controlled trial design, it expected that these aspects were similar in both groups. Another limitation is the lack of the assessment of OPs' actual guideline adherence that might have given more information to explain the found results. More comprehensive outcomes were collected for the smaller sample of 128 workers and the results of these evaluations will be published separately.

Overall, the intervention developed to enhance OPs' guideline adherence in this study did not reduce the sickness absence duration in workers with CMD. Several possible explanations were given for this lack of effectiveness. Future research should further explore the

implementation process and the effect of the implementation strategy on the provided occupational health care, preferably in a mixed methods design. If conditional extern barriers for using the guideline actually impede optimal guideline-based care, than future research should also focus on the organization of occupational health care beside the one-sided focus on interventions for occupational professionals. Furthermore, recently a positive effect on RTW was found for a decision aid for OPs combined with an e-health module for workers [33]. Possibly guideline-based care can be improved by providing such tools for occupational professionals and workers. In general, recent studies have shown CMD workers' long-lasting sickness absence duration whereby mental health problems remain a large problem for society. Future research and practice should continue the search on how to solve this problem.

Abbreviations

CMD: common mental disorders
NVAB: Netherlands Society of Occupational Medicine
RTW: return to work
OP: occupational physician
RCT: randomized controlled trial
OHS: occupational health service
ICD-10: International Classification of Diseases version 10

Author contributions

KvB, EB, MJ, JvW, BT, and JvdK contributed to the conception and design of the study. MdB and KvB performed the statistical analyses. KvB wrote the manuscript. KvB, EB, MJ, MdB, JvW, BT, and JvdK revised and commented on the manuscript. All authors read and approved the final manuscript.

Conflicts of interest

JvdK was the manager and main author of the NVAB guideline. JvdK did not receive fees for the use of the guideline. KvB, EB, MJ, MdB, BT declare that they have no conflicts of interests.

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Chapter 8

Use of a mental health guideline by occupational physicians and return to work in workers sick listed due to common mental disorders: a retrospective cohort study.

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Submitted

Abstract

Purpose

The aim of this study was to evaluate 1) whether adherence to the Dutch occupational mental health guideline by occupational physicians (OPs) was associated with time to return to work (RTW) in workers sick listed for common mental disorders; and 2) whether adherence to specific parts of the guideline was associated with time to RTW.

Methods

Twelve performance indicators were developed to assess OPs' guideline use. Medical records of 114 sick-listed workers were audited, indicating no (0), low (1) or adequate adherence (2). These results were related to the time to first and full RTW using Cox regression analysis.

Results

Low overall guideline adherence was associated with neither earlier full RTW (HR 1.25 (95%CI 0.82 – 1.89), p = 0.301) nor earlier first RTW (HR 1.07 (95%CI 0.52 – 1.21), p = 0.747). Regular contact between OP and employer was significantly associated with earlier full RTW (HR 1.87 (95%CI 1.10 – 3.16), p = 0.021).

Conclusions

Because OPs' guideline adherence was low, no conclusions can be drawn about associations between *adequate* guideline-based care and workers' RTW. Overall, OPs' low adherence to the guideline was not related to earlier RTW in workers. Regular contact between OP and employer was associated with earlier full return to work. Potentially, there is considerable room for improvement in guidance of these workers if adequate guideline adherence can be achieved.

Introduction

Considering the fact that in many countries mental health problems account for high numbers of sick listed workers [1-3] it is surprising that so far, very few evidence based guidelines exist in the occupational health care context worldwide [4]. Medical evidence-based practice guidelines are considered to be effective tools to improve the quality of care, including occupational health care [5, 6]. Specifically for occupational physicians (OPs), the Netherlands Society of Occupational Medicine (NVAB) developed (2000) and revised (2007) an evidence-based practice guideline named 'Management of mental health problems of workers by occupational physicians' [7, 8]. This guideline was distributed among Dutch OPs, and became part of their continuing medical education.

The evidence-based occupational mental health guideline promotes an activating approach of the OP in monitoring and enhancing the problem solving capacity of the worker, aiming to establish early and sustainable work resumption [7, 8]. Previous research supports the effectiveness of the methods incorporated in the guideline [9, 10]. However, research on the use of the first edition of this Dutch occupational mental health guideline showed that in general the guideline adherence by OPs was limited [11-13]. This despite the fact that OP's attitudes towards the first edition of this guideline were found to be fairly positive [14] and some promising associations between better guideline adherence by OPs and reduced sickness absence duration in workers with adjustment disorders were found [13].

To improve guideline adherence, recently an intervention for OPs was developed and evaluated focusing on identifying and solving the barriers for applying the occupational mental health guideline in daily practice [15, 16]. The results showed improved perceived guideline adherence, increased knowledge, improved attitudes towards guideline use, but also persisting external barriers for OPs' guideline use [16]. However, it is still unknown if actual better adherence to the revised occupational mental health guideline is associated with earlier return to work (RTW) in workers with common mental disorders, and which parts of this guideline particularly influence the RTW process. Specifically, the focus of the present study is on the following research questions: 1) Is guideline adherence by OPs associated with earlier RTW in workers, compared to no guideline adherence? 2) Is adherence to specific parts of the guideline associated with earlier RTW in workers, compared to no guideline adherence?

Methods

Study context

In the Netherlands, according to the Dutch Gatekeeper Improvement Act [17] both employer and worker are being held responsible for the recovery and RTW process of the sick listed worker, and risk high financial fines if they do not cooperate. The employer is obliged to pay at least 70% of the wages for a period of two years after the start of the sickness absence period. During this two year period sick listed workers cannot be fired. The employer is also obliged to provide access

to occupational health care for the sick listed worker, and to make work adaptations if necessary. Employers contract an independently operating occupational health service, which provides occupational health care, or contract an independent occupational professional. The OP has a central role in the Dutch social security system, guides the worker during the recovery and RTW process, and gives advice to the employer. The OP should monitor the recovery and RTW process, and report this in the confidential medical record of the worker.

Guideline-based care

The central aim of the guideline is early and sustainable work resumption of workers sick listed due to mental health problems. The guideline consists of four consecutive steps [7], as described in Table 1.

Table 1 Summery of the Dutch occupational mental health guideline [7]

Part of the guideline		Content
1	Problem orientation and diagnosis	An early involvement of the OP in the sick leave process of the worker is promoted (first consultation within 2 weeks after the worker reports sick). A simplified classification of mental health problems is introduced in four categories: i) stress-related complaints, ii) depression, iii) anxiety disorder, and iv) other psychiatric disorders. Furthermore, problem inventory should focus on factors related to the worker, his or her work environment, and the interaction between these two.
2	Intervention / Treatment	The OP acts as a case manager by monitoring and evaluating the process of recovery. If recovery stagnates the OP should intervene by acting as care manager by using cognitive behavioural techniques to enhance the problem-solving capacity of the worker, providing the worker and the work environment with information / advice on the recovery and the RTW process, contact the general practitioner when problems remain the same or increase, and refer the worker to a specialised intervention if necessary. In addition, the OP should advise the work environment (e.g. supervisors, managers, human resource managers) on how to support the worker and enhance the recovery and RTW process.
3	Relapse prevention	Integration of relapse prevention from the first contact with the worker by enhancing the problem-solving capacity of the worker. The newly acquired problem solving skills are explicitly addressed in at least one specific relapse prevention meeting after RTW.

4	Continuity of care / Evaluation	During all meetings, evaluation of the recovery process includes the perspectives of the worker, supervisor, and other involved professionals. Follow-up meetings with the worker should take place every 3 weeks during the first 3 months, and every 6 weeks thereafter. The supervisor or work environment should be contacted once a month. Follow-up contacts with the general practitioner or other professionals should take place when the recovery process stagnates or when there is doubt about the diagnosis or treatment.

OP: occupational physician
RTW: return to work

Study procedure

The data of the current study were gathered as part of a larger study on the effect of an intervention to enhance guideline adherence of OPs. The OPs allocated to the intervention group in this study received a peer-learning group training aimed at discussing the content of the guideline and the perceived barriers for guideline use, and finding and implementing solutions to solve these barriers. This training consisted of eight-sessions of two hours spread out over one year. The OPs allocated to the control group did not receive this training [15]. In this larger study 116 workers, aged 18-64, who received guidance of a participating OP gave their written informed consent for retrospectively auditing their medical record to assess OPs' guideline adherence and using their data on sickness absence. Finally, the data from 114 workers guided by 34 OPs were available for this study. One medical record was not available at the occupational health service, and the audit of another medical record revealed that mental health problems were not the primary reason for the sickness absence. Participating OPs were not informed about the inclusion of workers in the study, but they did know which workers were asked to participate (about 500 workers in total).

The data on sickness absence and RTW of the 114 workers were retrospectively obtained from the registration system of the occupational health service for one year after their initial sickness absence date. In the larger study the workers were allocated into two groups (intervention and control group), and in the current study the data of both groups were merged and used. Therefore, the group allocation was added as a variable to the model to correct for possible influence [18].

Prior to the start of the study, approval was obtained from the Medical Research Ethics Committee of St. Elisabeth Hospital in Tilburg (MREC number 1162). Trail registration: ISRCTN86605310.

Measures

OPs' guideline adherence

A set of 12 guideline-based performance indicators was developed to assess OPs' guideline adherence (see table 2). These performance indicators were systematically developed using an iterative consensus rating procedure for deriving indicators from guidelines [19-22]. First, the 24 most important guideline recommendations that would have impact on the quality of occupational care were independently preselected by three experts (an OP, a psychologist, and a researcher). Second, in an expert meeting nine experts with expertise on mental health, occupational health, and quality of care, discussed the relevance of the 24 recommendations for OPs' performance. This resulted in a selection of 20 recommendations categorized in five key recommendations. Finally, the selected recommendations were transcribed into performance indicators and a subsequent scoring set. Two researchers pilot tested the performance indicators and scoring set by the means of auditing ten medical records. Based on their findings the performance indicators were adapted to the final set of 12 performance indicators categorized in five key indicators [Joosen et al., submitted].

The performance indicators were classified as 0 (no guideline adherence), 1 (low adherence) or 2 (adequate adherence). Post hoc, the audit ratings were dichotomized because there were too few medical records showing adequate adherence (score 2) to perform the analyses on. A score of 0 were categorized as 'no guideline adherence', and score of 1 and 2 were categorized as 'low-moderate guideline adherence'. Overall guideline adherence was dichotomized by using the median score of the sum score of all performance indicators (range 0-24) as cut off score.

Two researchers independently audited the medical records of workers, knowing neither who the worker was, nor which OP had guided him or her. In case of no consensus a third researcher audited the medical record and decided about the final score.

Table 2 Description of 12 performance indicators for occupational physician's guideline adherence in workers' medical records and criteria for their scoring [Joosen et al., submitted].

Performance Indicator based on guideline content		Criteria based on guideline content	Degree of guideline adherence
Process diagnosis			
1.1	Monitoring the recovery phase of the worker	The process of recovery (i.e. phase of the recovery process: crisis phase, problem solving phase, implementation phase) should be monitored throughout the sickness absence period	0 = Recovery phase is not noted 1 = Recovery phase is occasionally noted 2 = Recovery phase is regularly noted
1.2	Assessment of the recovery tasks worker	The tasks needed to achieve recovery should be assessed throughout the sickness absence period (e.g. gaining insight into what happened, accepting the situation, regain day structure, problem identification and finding solutions, implement solutions, regain roles)	0 = Recovery tasks are not noted 1 = Recovery tasks are occasionally noted 2 = Recovery tasks are regularly noted
1.3	Assessment of employers' perspective	The way the employer (e.g. supervisor, management, human resource management) copes with the sick listed worker and their perspective on recovery should be assessed during the sickness absence period	0 = No information about the employers' perspective 1 = Occasional information about the employers' perspective 2 = Clear description of the employers' perspective in relation to the workers' situation
Problem orientation			
2.1	Problem identification	The relation between factors that influence the mental health problems and performance at work and home should be identified (e.g. overburdened by high workload or work conflict or lack of social support)	0 = Problems are not noted 1 = Problems are noted, relation with performance is not noted 2 = Problems and their relation with performance are noted

2.2	Assessment of symptoms	Presence or absence of essential symptoms of mental health problems should be assessed (i.e. distress, depression, anxiety, and somatization)	0 = No symptoms are noted 1 = Symptoms are occasionally noted 2 = Presence or absence of the essential symptoms are noted
2.3	Diagnosis	Diagnosis based on ICD-10 and supported with arguments	0 = No diagnosis is noted 1 = Diagnosis is noted without arguments 2 = Diagnosis including arguments is noted
Intervention / Treatment			
3.1	Evaluation course recovery process worker	The course of the recovery process (stagnation or recovery process as expected) should be evaluated and supported with arguments.	0 = Course of recovery process is not noted 1 = Course of recovery process is noted without arguments 2 = Course of recovery process is noted including arguments
3.2	Treatment in accordance with recovery process worker	IF recovery process is 'as expected' the OP acts as process manager by monitoring the process of recovery and using minimal interventions. IF recovery process stagnates the OP also acts as care manager by providing a more extensive guidance with treatment based on cognitive behavioral techniques, provide the employer with advice on recovery and the RTW process, contact other involved health care professionals (e.g. general practitioner, psychologist), and if necessary refer the worker to specialized care.	0 = Treatment is not in accordance with the recovery process 1 = Treatment is in accordance with the recovery process without argumentation 2 = Treatment is in accordance with the recovery process including argumentation

Relapse prevention			
4.1	Relapse prevention by occupational physician	Relapse prevention should be integrated during consultations AND OP has at least one consultation with the worker after full RTW	0 = No information on relapse prevention 1 = Information on relapse prevention during or after the sickness absence period was noted 2 = Information on relapse prevention during the sickness absence period was noted AND occupational physician has at least one consultation with the worker after full RTW
Continuity of care / Evaluation			
5.1	Rapid first consultation worker	The first consultation where both OP and worker are physically present should be within 15 days from 1st day of sickness absence.	0 = First consultation after 22 days 1 = First consultation between 15-22 days 2 = First consultation with 15 days
5.2	Regular contact worker	Consultations with the worker take place every 3 weeks during the first three months of sickness absence. After three months of sickness absence consultations take place every 6 weeks.	0 = Interval between consults is 6 weeks or more during 1st three months AND 9 weeks or more thereafter 1 = Interval between consults is 4-5 weeks during 1st three months AND 7-8 weeks thereafter 2 = Interval between consults is less than 4 weeks during 1st three months AND less than 7 weeks thereafter
5.3	Regular contact employer	The OP contacts with the employer (e.g. supervisor, manager, human resource manager) during the sickness absence period every 4 weeks.	0 = Contacts every 8 weeks or more 1 = Contacts every 5-8 weeks 2 = Contacts every 4 weeks or less

RTW: return to work; OP: occupational physician

RTW of workers

Time to full RTW was calculated as the number of calendar days between the first day of sickness absence and the first day of full RTW. Full RTW was defined as working the number of hours of their employment contract, for at least 4 consecutive weeks. Time to first RTW was calculated as the number of calendar days between the first day of sickness absence and the first day of RTW, irrespective of the number of working hours per week and the occurrence of sickness absence relapses.

Possible confounders

The following baseline characteristics were checked for possible confounding: age, gender, severity of symptoms (measured with the Four Dimensional Symptom Questionnaire (4DSQ): distress, depression, anxiety and somatization) [23], work related self-efficacy (measured with return to work self-efficacy (RTW-SE) scale) [24], perceived workability (measured with single question of the workability index (WAI)) [25, 26], and the original group allocation. More details about these questionnaires are described elsewhere [15].

Statistical analyses

OPs' guideline adherence

Descriptive analyses were used to calculate the percentage of medical records in which guideline-based care was provided (performance rate).

RTW of workers

Descriptive analyses were used to calculate the mean and median time to full and first RTW.

OPs' guideline adherence and time to RTW of workers

Cox regression analysis was used to compare the difference between no guideline adherence and guideline adherence by the OP on (time to) full and first RTW of workers. To correct for the cluster design the frailty random effect was used in this analysis [27, 28]. Workers were censored when full RTW or first RTW was not established within the follow up period, or when the sickness absence period ended before RTW was established. It is likely that these workers resigned or that the employer contracted another occupational health service, but it was not possible to retrieve this information from the registration system of the occupational health service. Because the data of the workers were collected in a lager study with group allocation, the original group allocation was added as a possible confounder and a possible effect modifier to the model to correct for possible influence of the original intervention for OPs. In case the original group allocation showed to be an effect modifier, it was added to the base model for the sub performance indicators and RTW. The possible confounders were added one by one to the base model to test if this influenced RTW or the coefficient more than 10% or, in case the base model

was non-significant, changed the significance of the model. All variables that showed to be confounders were added to the final model in a single step.

Analyses were performed with SPSS version 19.0 and R statistical program version 3.1.2. with the frailtypack [27].

Results

OPs' guideline adherence

The actual degree of overall guideline adherence was low, since the median score of the sum score of all performance indicators was 8 (min-max 0-18) on a range of 0-24.

The degree of adherence to specific parts varied per performance indicator. The percentage of low-moderate guideline adherence per performance indicator was as follows: 'Problem identification' (95.6%), 'Diagnosis' (84.2%), 'Rapid first consultation worker' (68.4%), 'Assessment of employers' perspective' (66.7%), 'Regular contact worker' (64.0%), 'Evaluation course recovery process worker'(55.3%), 'Assessment of the recovery tasks worker'(54.4%), 'Treatment in accordance with recovery process worker'(50.9%), 'Monitoring recovery phase worker'(43.0%), 'Assessment of symptoms'(34.2%), 'Regular contact employer' (21.1%), and 'Relapse prevention by occupational physician'(20.2%).

There were only two performance indicators with more than 20% adequate guideline adherence, these were: 'Rapid first consultation worker' (52.6% adequate adherence), and 'Regular contact worker' (26.3% adequate adherence).

RTW of workers

Table 3 shows the baseline characteristics of the 114 workers. The average age of workers was 46 (SD 10.7), the majority was female. The average age of the OPs was 54, and the majority was male (77%).

After one year, 79% of the workers established full RTW and 84% of the workers established a first RTW (n = 114). The mean time to full RTW was 220 calendar days (SD 112) and the median time to full RTW was 204 calendar days (range 27 – 365). The mean time to first RTW was 159 calendar days (SD 124) and the median time was 117 calendar days (range 0 – 365).

Table 3 Baseline characteristics worker

Characteristic worker	n	mean	SD	%
Age	114	46.4	10.7	.
Gender, male	114	.	.	41.2
RTW self-efficacy (range 1-6) [1]	107	3.5	0.8	.
Workability (range 0-10) [1]	103	5.4	2.5	.
4DSQ (Four-Dimensional Symptom Questionnaire) [23]				
Distress (range 0-32) [1]	109	18.0	9.3	.
Depression (range 0-12) [1]	111	2.8	3.7	.
Anxiety (range 0-24) [1]	109	5.4	5.2	.
Somatization (range 0-32) [1]	107	9.3	6.6	.

OP: occupational physician

[1]*Higher scores indicate a greater presence of the named factor*

OPs' guideline adherence and time to RTW of workers

Actual overall guideline adherence (median score 8 and higher) was not associated with earlier full RTW (HR 1.25 (95%CI 0.82 – 1.89), p = 0.301) or earlier first RTW (HR 1.07 (95%CI 0.52 – 1.21), p = 0.747). In almost none of the performance indicators low-moderate guideline adherence was associated with RTW (see table 4 and table 5). Regular contact between OP and employer (PI5.3) was significantly associated with earlier full RTW of workers (HR 1.87 (95%CI 1.10 – 3.16), p = 0.021). Two parts of de guideline were associated with delayed RTW (see table 4 and table 5). These were performance indicator 1.1 and 1.3 ('Monitoring recovery phase worker' and 'Assessment of employers' perspective').

The results are presented in table 4 (full RTW) and table 5 (first RTW). A hazard ratio of more than 1 indicates earlier RTW in case there is adherence; a hazard ratio less than 1 indicates delayed RTW. The variable group allocation was not a confounder, but it was an effect modifier in some analyses. In several analyses possible confounders had a relation with the adherence to the performance indicator and RTW.

Table 4 Cox regression analysis of guideline adherence and time to full return to work (n = 114)

	Performance Indicator	HR	95% CI	P value
Process diagnosis				
1.1	Monitoring recovery phase worker adjusted for confounder anxiety	0.62	0.39 – 0.97	0.035*
1.2	Assessment of the recovery tasks worker	0.92	0.60 – 1.38	0.667
1.3	Intervention group: assessment of employers' perspective adjusted for confounders anxiety, somatization, workability	1.52	0.75 – 3.06	0.246
	Control group: assessment of employers' perspective adjusted for confounders anxiety, somatization, workability	0.37	0.18 – 0.77	0.008*
Problem orientation				
2.1	Problem identification	0.68	0.26 – 1.24	0.439
2.2	Assessment of symptoms	0.80	0.52 – 1.24	0.317
2.3	Diagnosis	0.87	0.50 – 1.54	0.642
Intervention / Treatment				
3.1	Intervention group: evaluation course recovery process worker adjusted for confounders distress, anxiety, somatization, workability, RTW-SE	1.72	0.68 – 4.38	0.254
	Control group: evaluation course recovery process worker adjusted for confounders distress, anxiety, somatization, workability, RTW-SE	0.63	0.29 – 1.39	0.254
3.2	Treatment in accordance with recovery process worker	1.16	0.77 – 1.75	0.487
Relapse prevention				
4.1	Relapse prevention by occupational physician	1.21	0.74 – 2.00	0.443
Continuity of care / Evaluation				
5.1	Rapid first consultation worker	1.29	0.81 – 2.03	0.281
5.2	Regular contact worker adjusted for confounders workability, RTW-SE	1.66	0.98 – 2.81	0.058
5.3	Regular contact employer adjusted for confounders distress, depression, somatization, RTW-SE	1.87	1.10 – 3.16	0.021*
Overall guideline adherence		1.25	0.82 – 1.89	0.301

RTW-SE: return-to-work self-efficacy

**Significant p < 0.05*

Table 5 Cox regression analysis of guideline adherence and time to first return to work (n = 114)

	Performance Indicator	HR	95% CI	P value
Process diagnosis				
1.1	Monitoring recovery phase worker adjusted for confounder anxiety	0.68	0.44 – 1.06	0.088
1.2	Assessment of the recovery tasks worker	0.79	0.52 – 1.21	0.279
1.3	Assessment of employers' perspective adjusted for confounders gender, anxiety, RTW-SE	0.59	0.36 – 0.96	0.033*
Problem orientation				
2.1	Problem identification	0.92	0.34 – 2.50	0.877
2.2	Assessment of symptoms	0.71	0.45 – 1.14	0.162
2.3	Diagnosis	0.75	0.43 – 1.30	0.302
Intervention / Treatment				
3.1	Evaluation course recovery process worker	0.81	0.53 – 1.23	0.320
3.2	Treatment in accordance with recovery process worker	1.05	0.69 – 1.59	0.829
Relapse prevention				
4.1	Relapse prevention by occupational physician	1.47	0.87 – 2.48	0.150
Continuity of care / Evaluation				
5.1	Rapid first consultation worker	1.32	0.84 – 2.09	0.231
5.2	Regular contact worker	1.26	0.81 – 1.98	0.304
5.3	Regular contact employer	1.36	0.82 – 2.26	0.228
Overall guideline adherence		1.07	0.52 – 1.21	0.747

RTW-SE: return-to-work self-efficacy
**Significant p < 0.05*

Discussion

The findings of our study indicate that OPs' actual guideline adherence was low, for which no conclusions can be drawn about the associations between *adequate* guideline adherence by OPs and the RTW of workers sick listed with CMD. OPs' low overall adherence to the guideline was associated with neither earlier full RTW nor earlier first RTW in sick listed workers. When evaluating specific parts of the guideline regular contact between OP and the employer was found to be significantly associated with earlier RTW in workers. In addition, regular contact

between the OP and the worker was non-significantly associated (p = 0.058) with earlier RTW. Low-moderate adherence in two guideline recommendations ('Monitoring the recovery phase of the worker' and 'Assessment of employers' perspective', see Table 2 for detailed information) were associated with delayed RTW of workers.

An important question that arises from the results of this study is why OPs adhered so minimally to the guideline. Some possible explanations can be given. First, the low degree of guideline adherence adds to previous research showing low guideline adherence among health care professionals in general [29-31]. Several implementation strategies have been developed and evaluated, but it still seems challenging to implement and improve professionals' guideline adherence [5, 14, 32-34]. Results from other studies have shown that barriers for guideline use play a crucial role in professionals' degree of guideline adherence. According to the framework of Cabana and colleagues barriers for guideline use specifically are knowledge-related, attitude-related, and related to external factors [29]. Second, in a qualitative study on barriers OPs perceived for the use of this guideline, OPs reported considerable external barriers (e.g. lack of time, limited number of contacts between OP and worker, and conflicting policy of and lack of collaboration with for example employer and other health care providers) that were difficult to overcome [35]. This findings underlines what Cabana and colleges [29] already pointed out, namely that the external barriers can affect the OPs ability to execute the guideline recommendations. Plausibly, in general, elimination of external barriers is conditional for better guideline adherence by professionals.

Despite low-moderate adherence, the performance indicator 'Regular contact employer' was significantly associated with earlier RTW of the worker. As about 80% of the medical records showed no regular contact between OP and employer, this suggests there is considerable room for improvement in care for their sick listed workers. In the current study it remains unknown whether this established contact was mostly initiated by the OP or by the employer, and whether earlier RTW caused more contact between the OP and the employer or vice-versa. The importance of the involvement of the employer (e.g. supervisor, human resource management or managers) in the recovery and RTW process underlines findings of other studies [36-39]. Apparently, if OPs can invest time in contact with the worker and the employer or when employers themselves are inclined to contact their OP and worker often, this tended to be associated with earlier RTW in this study and is in line with previous studies [9, 39].

The finding that two performance indicators ('Monitoring the recovery phase of the worker' and 'Assessment of employers' perspective') were associated with delayed full RTW and delayed first RTW in workers seems counter-intuitive. There are several explanations for these findings. First, perhaps OPs who were able to do a better assessment of the process diagnosis find more complaints and problems needing more time for the recovery and RTW process. Alternatively, in more complex and severe cases, these two performance indicators may receive more attention and are better noted in the medical records.

Strengths and limitations

The present study has several strengths and limitations that need to be discussed. First, a strength is the conscientious and careful procedure in which the performance indicators were developed. Another strength is the low risk for bias, as data were obtained from the registration system of the occupational health service. An audit of medical record is susceptible to bias. The risk for recording desired performance by the OP is minimal, since the data collection started 3.5 year after the OPs and 1.5 years after the workers had given informed consent. A limitation of this study is that medical records do not necessarily reflect actual behavior of the OP, for example due to habit, lack of time, or an inadequate record system. However, the method of auditing medical records is also a strength, since it hardly interferes with actual performance, like for example actual or video observation of consultations would have done. To prevent interpretation bias all medical records were blindly assessed by two researchers independently and a third researcher in case no consensus was reached. Another limitation is that in this study it was assumed that all individual performance indicators influenced the degree of guideline adherence in an equal way. But, some performance indicators might be conditional for others: if an OP does not have regular contacts with the worker or the employer, it can hardly be expected that increased knowledge and skills will optimize the guidance. This might imply that, because the tight terms were mentioned in medical record, a score was given for example for a process indicator while in fact there were not enough consultations to monitor the process properly.

Conclusion and implications

Because the actual guideline adherence was too low, it was not possible to evaluate the associations between *adequate* guideline adherence and the time to RTW in workers with common mental disorders. Low overall guideline adherence was not associated with earlier RTW in workers with common mental disorders. However, when evaluating specific parts of the guideline, regular contact between the OP and the employer was found to be associated with earlier RTW in workers, even with low-moderate adherence. Future research should explore this association further, and also focus on how implementation problems and conditional external barriers for guideline use can be overcome, as to improve the quality of guideline-based occupational mental health care. Probably, future implementation should also target the level of organizations to reduce organizational constraints that enable professionals to provide high-quality occupational health care. If adequate guideline adherence by OPs is achieved, future studies should explore the impact of adequate adherence on workers' return to work.

Abbreviations

OP: occupational physician
NVAB: Netherlands Society of Occupational Medicine
RTW: return to work
4DSQ: Four Dimensional Symptom Questionnaire
RTW-SE: return to work self-efficacy
WAI: Workability Index

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Author contributions

KvB, MJ, BT, JvW, JvdK, and EB, contributed to the conception and design of the study, and audited the workers' medical records. BT and KvB performed the statistical analyses. KvB wrote the manuscript. KvB, MJ, BT, JvW, JvdK, and EB revised and commented on the manuscript. All authors read and approved the final manuscript.

Conflicts of interest

JvdK was the manager and main author of the NVAB guideline. JvdK did not receive fees for the use of the guideline. JvdK, MJ, and EB developed the training for occupational physicians in this study. MJ was the trainer of the training for occupational physicians. The authors did not receive fees for conducting the training. KvB, BT, and JvW declare that they have no conflicts of interests.

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Chapter 9 General discussion

As in many Western countries, in the Netherlands, common mental disorders (CMD) such as depression, anxiety disorders, adjustment disorders, and stress related disorders often lead to long-term sickness absence [1-6]. Long-term sickness absence is associated with individual suffering [3, 6]. In addition to individual suffering, the financial costs for employers and society are high [1].

In general, evidence based practice guidelines are considered as effective tools to improve the quality of care [7, 8]. Specifically for occupational physicians (OPs) the Netherlands Society of Occupational Medicine (NVAB) developed (in 2000) and revised (in 2007) an evidence and practice based guideline named 'The management of mental health problems of workers by occupational physicians' [9, 10]. A retrospective study on the effect of the first edition of the occupational mental health guideline showed that closer adherence was associated with a shortened sickness absence in workers with adjustment disorders [11]. Despite a positive attitude towards the guideline, OPs' actual adherence to the guideline after receiving a three-day guideline training was limited [12, 13]. This requires new effective implementation strategies.

To improve adherence to the occupational mental health guideline, a tailored implementation strategy based on findings from scientific implementation literature was developed for this study [14-20]. This intervention consisted of an eight-session training in small peer-learning groups, took place over the course of 12 months, and focused on barriers that hindered OPs from using specific recommendations of this guideline in practice. Central to the intervention was the model of Cabana and colleagues [21], according to which there are three clusters of barriers for guideline use: knowledge-related, attitude-related and external barriers (i.e. barriers OPs have no or limited influence on, such as high work pressure). The intervention specifically aimed at reducing barriers at these three levels by using a Plan-Do-Check-Act cycle to explore OPs' perceived barriers and find suitable solutions to address these barriers [22]. The effect of the intervention was evaluated with a cluster randomized controlled trial. OPs in the intervention group received the training, OPs in the control group did not. All eligible workers reporting sick due to CMD and guided by the participating OPs received an invitation to participate in the study. The general aim of this thesis was to evaluate the impact of this intervention to enhance OPs' guideline adherence on the provided guideline-based care by OPs and on the workers' outcomes. Figure 1 shows the conceptual model of this thesis with the several research methods used.

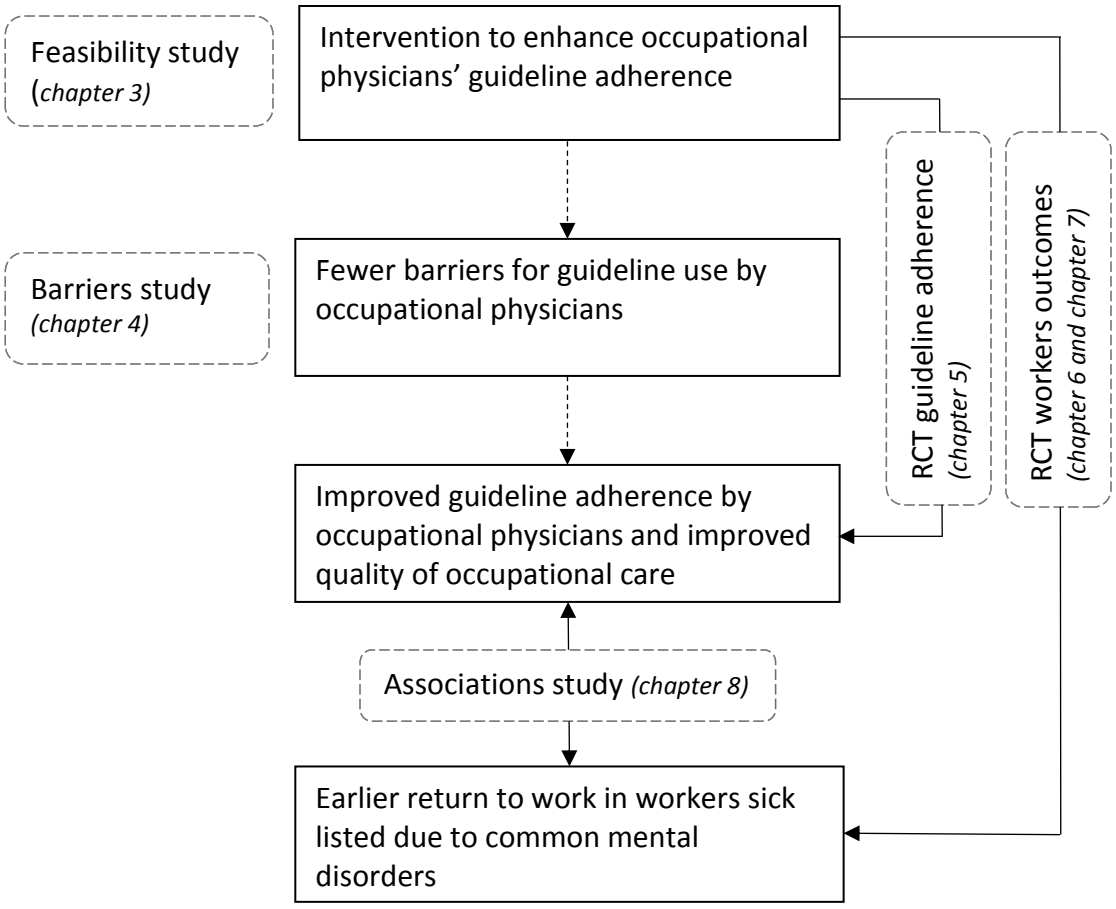

Figure 1 Conceptual model of this thesis including the several research methods

Below, first the main findings will be described per research objective. Second, the interpretation and explanation of the main findings will be discussed. Third, the methodological considerations will be described. Finally, the implications for practice and future research will be discussed.

Main findings

Feasibility and impact tailored implementation strategy (chapter 3)

The aim of this study was to evaluate the feasibility and impact of the tailored intervention to enhance OPs' guideline adherence. The feasibility study showed that the intervention was conducted as planned. After the training significant improvement was found in OPs' knowledge, self-efficacy, and skills to use the guideline. Furthermore, OPs' perceived guideline adherence rose significantly from 49% before the training to 97% after the training. Moreover, OPs were highly satisfied with the content of the intervention and felt empowered to guide workers with CMD and to cooperate with other (mental) health care providers. However, OPs' perceived external barriers remained, restricting adherence.

Occupational physicians' perceived barriers for guideline use and solutions (chapter 4)

The aim of this qualitative study was to evaluate OPs' perceived barriers for guideline use and to evaluate the solutions they came up with themselves and tested throughout the training. Limited knowledge was found regarding all parts of the guideline as well as the availability of guideline-related tools. Common attitude-related barriers were a lack of agreement with guidelines in general, a lack of self-efficacy to perform certain guideline recommendations, and difficulties in changing habits and routine actions. Common external barriers were of a work-contextual nature, such as lack of time, high work pressure, restrictive contracts between occupational health services and employers, and conflicting policies of and a lack of collaboration with other parties. The solutions the OPs came up with themselves to address the perceived barriers during the training period, were particularly targeted at knowledge and attitude-related barriers as opposed to external barriers.

Effect of the intervention on occupational physicians' actual guideline adherence (chapter 5)

The aim of this part of the cluster randomized controlled trial was to evaluate the effect of the intervention on actual guideline adherence by OPs. A significant difference was found in the overall guideline adherence between OPs who received the training and OPs who did not receive the training. In addition, OPs who received the training showed significantly better guideline adherence compared to the control group in four out of five key performance indicators. However, overall the degree of guideline adherence was still low in both groups.

Short-term effect of the intervention on workers' 'RTW self-efficacy' (chapter 6)

The aim of this part of the cluster randomized controlled trial was to evaluate the short-term effect of the intervention on the 'RTW self-efficacy' of workers, and to evaluate the association between workers' 'RTW self-efficacy' at baseline and RTW three months later. The evaluation showed that workers' 'RTW self-efficacy' increased significantly more in workers whose OPs participated in the intervention during the first months of sickness absence. In addition, there was a significant association between workers' RTW self-efficacy at baseline and full RTW three months later, but the intervention did not affect this association.

Long-term effect of the intervention on workers' sickness absence duration (chapter 7)

The aim of this part of the cluster randomized controlled trial was to evaluate the long-term effect of the intervention on sickness absence duration of workers sick listed due to CMD. The results showed no significant differences in workers' (time to) full RTW or workers' (time to) first RTW. The intervention did not lead to shortened sickness absence duration in workers. The total hours of sickness absence of workers was 478 hours in the intervention group and 483 hours in the control group.

Association between occupational physicians' guideline adherence and workers' RTW (chapter 8)

The aim of this retrospective cohort study was to evaluate the association between OPs' guideline adherence and sickness absence duration in workers sick listed due to CMD. The study showed low overall guideline adherence by OPs. This low adherence was associated with neither earlier full RTW, nor earlier first RTW in workers sick listed with CMD. However, although low-moderate adherence was found, regular contact between OP and employer was significantly associated with earlier full RTW in workers with CMD. Regular contact between OP and worker was non-significantly associated with earlier full RTW. Contrary to expectations, low-moderate adherence to two other parts of the guideline recommendations ('Monitoring the recovery phase of the worker' and 'Assessment of employers' perspective') were associated with delayed RTW.

Interpretation and explanation of the main findings

The intervention to enhance OPs' guideline adherence did not result in a considerable improvement in OPs' guideline use, as guideline adherence remained low. Plausibly, this may also explain the fact that hardly any impact was found on workers' outcomes.

Despite the extensive intervention to enhance OPs' guideline adherence, adequate guideline-based care by OPs was not achieved. The intervention was based on evidence-based elements for a successful guideline implementation strategy for physicians [14-20]. The intervention was conducted as planned, and all participating OPs attended and participated in the eight meetings. Although the actual guideline adherence by the OPs was significantly higher in the intervention group compared to the control group, overall the adherence in both groups was minimal. The barriers study showed several knowledge-related, attitude-related, and external barriers. The solutions the OPs came up with to address the perceived barriers during the training period, were particularly targeted at knowledge and attitude-related barriers, and much less at external barriers. A possible explanation for the low guideline adherence is that the OPs in the intervention group were not able to address the perceived *external* barriers in daily practice, as these were beyond their control and concerned decisions made by others (e.g. the occupational health service, or employers). Almost no solutions to solve the external barriers were developed and tested during the training period. It is plausible that the external barriers were too extensive to be changed by a professional-directed intervention. It is also possible that the external barriers are conditional for improving OPs guideline use, and for using improved knowledge and a positive attitude in practice [21]. In the part of the guideline concerning 'Continuity of care' there was no difference between the intervention and control group. Especially in this part of the guideline adequate adherence to recommendations is dependent on external factors, which could not be solved by the intervention. It was remarkable that precisely in this part of the guideline, with no contrast between the groups, there appeared to be a significant relation between performance

('Regular contact employer') and workers' RTW. Furthermore, in almost all medical records OPs did not adequately adhere to the parts of guideline concerning the evaluation of the course of the recovery process and provided guidance (e.g. not intervening when recovery stagnates). Especially these parts of the guideline might contribute to better workers' outcomes. Although low adherence to these parts of the guideline could be a result of the external barriers by which OPs have had too little time for proper evaluation and interventions, the audits of the medical records also suggest that many OPs guidance lacked proactivity. As such, guidance may be improved by a more proactive role of the OP. This accounts especially for overcoming stagnation, and by contacting other professionals and the employer.

It needs to be noted that there was a substantial difference between OPs' perceived guideline adherence in the feasibility study and actual guideline adherence as assessed by auditing the workers' medical records. This finding is in line with previous research, which showed that self-reported guideline adherence was not an accurate measure of guideline adherence [23]. OPs seemed to overestimate their own behavior. An alternative explanation is that, as indicated above, due to extra efforts and investing 'own time', OPs might succeed in adhering to several parts of the guideline during the training, leading to a high perceived adherence. The medical records were audited for the period after the training when restrictions were no longer compensated by extra efforts.

Since findings of this and other studies showed that repeated attempts to implement the guideline and to improve OPs' guideline adherence have failed, the question rises if it is possible to achieve adequate adherence to the present guideline by OPs. This must be seen in the context of last decade's focus on cost reduction and restrictive RTW management (e.g. fewer consultations, more time in between consultations) influencing the quality of provided occupational health care and workers' RTW. Dutch OPs act within the Dutch Gatekeeper Improvement Act [24], in which both employer and worker are responsible for taking care of the recovery and RTW process. By law, the employer is obliged to provide access to occupational health care for the sick listed worker. Employers contract an independently operating occupational health service, which provides occupational health care, or contract an independent occupational health professional. It is plausible that the restrictive RTW management contributes to the external barriers for adequate guideline use by OPs, such as lack of time for effective guidance. The intended cost reduction on the organizational level by restrictive RTW management may lead to more costs for society and employers due to long lasting sickness absence. The study by Van der Klink et al [25] showed positive influence on workers' sickness absence duration, but thereafter only few studies has been successful in that aspect [12, 25-27]. Most of these studies had in common that there were few external restrictions for OPs' guidance [12, 25, 26]. Most other studies had to contend with low guideline adherence [11, 28]. As such,

convincing evidence that this guideline is effective is lacking. Probably, a combined strategy of increasing the feasibility of the guideline and incorporating organizational targets is necessary to achieve adequate adherence for an effective evaluation and implementation.

Despite OPs' guideline adherence was low, some promising workers' outcomes were found that were in line with other research, and that might need to be more emphasized and anchored in an update of the guideline. First, regular contact between OP and employer, which is one of the (key) recommendations of the guideline, seemed important for successful and sustainable RTW of workers sick listed due to CMD. This underlines previous research findings that the employer and the supervisor seem to play a major role in the recovery and RTW process [29-32]. Furthermore it was promising that, although OPs' guideline adherence was low, the intervention seemed to increase 'RTW self-efficacy' in sick-listed workers in the intervention group more compared to the control group. Increasing 'RTW self-efficacy' can be of interest, since 'RTW self-efficacy' has shown to be an adequate predictor of the time to RTW [30, 33, 34].

Methodological considerations

It is a strength of the study that several research methods were used to evaluate the different steps in the process from intervention for OPs to earlier RTW in workers sick listed due to CMD. These included a cluster randomized controlled trial, a feasibility study, a qualitative evaluation of OPs' perceived barriers, and a retrospective cohort study. As the conceptual model shows (see Figure 1), there were some essential steps to be taken from intervention to final outcome: from OPs experiencing the intervention to perceiving fewer barriers for guideline use, from fewer barriers to improved guideline adherence by OPs, and from improved guideline adherence to impact on the RTW of workers sick listed due to CMD's. The results of the evaluations in the essential steps were useful for interpreting and explaining the findings of the cluster randomized controlled trial, and could be useful for practice as well. For example, OPs' perceived barriers for guideline use and their own solutions tested can serve to improve the guideline and the organization of occupational mental health care.

Another strength is that the method used to develop the intervention to enhance OPs' guideline adherence was based on findings from scientific implementation literature on how to improve guideline adherence. A drawback of this method was that key stakeholders, such as OPs, occupational health service, and employers, were not involved in the developmental process, which might be crucial for successful implementation and behavior change [15, 18, 35, 36]. However, during the eight sessions OPs were highly involved in conducting the content of the intervention, which focused specifically on discussing their needs. The lack of involvement of the occupational health service and employers during the sessions might be a main cause for OPs not being able to solve all the external barriers. A generic method was used to implement a specific

guideline within a specific target group, whereby the intervention could be suitable for transferring to a wide range of professionals and guidelines.

A limitation is that selection bias may have been caused by the fact that OPs who voluntarily applied to the study perhaps were more eager to improve their guidance, and had a more positive attitude towards the occupational mental health guideline. However, due to the randomization this will have occurred in both the intervention group and in the control group. This limitation is inevitable in studies on professionals' behavior change, since studies asking for active participation of the health professionals require a high motivation of the participants [37, 38]. Furthermore, it was a strength that eligible workers sick listed due to CMD were selected from the occupational health service registration system to prevent selection bias.

Another strength is that sickness absence and RTW data of the 3379 workers were obtained from the registration system to prevent recall bias, which could occur in workers with CMD. However, this had as drawback that the number of available baseline characteristics that could be taken as possible confounders or possible effect modifiers in the analyses, was restricted. This has limited the possibility to explain the results found.

Moreover, the method used to assess OPs' actual guideline adherence contained risks for bias. Underestimation might have occurred when OPs did not record their complete performance in the workers' medical records. There was also a risk for recording desired performance by OPs. Furthermore, overestimation might have played a role, because the performance indicators were scored independently of each other, while some performance indicators might be conditional for others. For example, with respect to the performance indicators about the evaluation of the course of the recovery process and provided guidance, if there was an indication in the reports this was scored regardless of the frequency of consultations (other performance indicator), while with a low frequency monitoring has no effect. On the other hand, the method used for assessing OPs' actual guideline adherence by audits of medical records is also a strength, since it hardly interferes with reality, as for example video observation would do.

Another limitation is that in this study it was assumed that all individual performance indicators influenced the degree of guideline adherence in an equal way. However, some performance indicators might be conditional for others: if an OP does not have regular contacts with the worker or the employer, it can hardly be expected that increased knowledge and skills will optimize the guidance. Furthermore, a limitation is that for some performance indicators the sample of medical records with guideline adherence was small, which might limit the reliability of the results.

Conclusions and implications for practice and research

The intervention in this thesis focused on behavior change of Dutch OPs, but did not lead to adequate guideline adherence among OPs, and a consequent shortened sickness absence duration in workers. Because adequate guideline adherence was not achieved, the effect of adequate guideline adherence on RTW could not be evaluated. Therefore, convincing evidence that this guideline is (un)effective in reducing sickness absence duration or enhancing recovery is still lacking. This guideline was developed in accordance with international standards for guideline development, i.e. based on the best available scientific evidence, supplemented with good practice and patient/worker preferences, and tailored to local circumstances [39]. Despite the fact that until today, strong evidence for the guideline as a whole on RTW is lacking, specific parts of the guideline are based on strong scientific evidence, such as recommendations based on cognitive behavioral therapy [26, 40-42] and relapse preventions consultations [40, 43]. Guidelines are important tools to implement the body of knowledge of a professional group in practice and to decrease variability in guidance. Therefore, it is important to continue to revise and develop the guideline and accompany this with further research to improve important outcomes for workers with mental health problems.

Recommendations for practice

Especially the study on OPs' perceived barriers for guideline use has led to a variety of improvements that can be used in updates of the guideline. The perceived knowledge-related, attitude-related, and external barriers, and OPs own suggested solutions to address them need to be taken into account when revising the guideline. Particularly, to enhance implementation and to address the conditional external barriers for guideline use, it is important that representatives from occupational health services and employers are involved in revising the guideline. Specifically this means that occupational health services and employers need to enable OP's guideline adherence, otherwise these powerful conditional external barriers and organizational constraints will continue to exist [44-46]. In addition, regular contact between OP and employer was found to be important for a successful recovery and RTW process of the worker. How to realize this regular contact and collaboration between OP and employer in daily practice warrants more attention and needs to be addressed.

The implementation strategy used in this study was generic and partly successful in enhancing OPs' guideline adherence, but failed to address all the contextual external barriers. The implementation strategy needs to be improved, and should incorporate stakeholders of the organizational level to collaborate with the involved professionals in addressing the conditional external barriers for guideline use and organizational constraints [44-46]. This counts especially in the Dutch occupational health care setting in which OPs have to deal with the interests of occupational health service, the interests of employers who contract the occupational health

care, the interests of sick listed workers, the interests of other involved (mental) health care professionals, and the interactions between all these stakeholders.

The findings of this thesis underline the importance of changes in the organization of the Dutch occupational health care that provide OPs with more opportunities to adequately adhere to the guideline. It is plausible that the restrictive RTW management contributes to the external barriers, such as lack of time for proper consultations. Improvement of the organization of the occupational health care in general (e.g. improved collaboration between occupational health service and employers), might enable OPs to provide occupational health care of a higher quality.

Recommendations for future research

Future research can contribute to the improvement of the guideline, optimizing the implementation, and evaluation of revisions of the guideline. Only if OPs adequately adhere to the guideline, it will be possible to optimally evaluate the impact of the guideline on workers' outcomes.

It is important to get more insight in how employers can facilitate adequate guideline use by OPs, and how collaboration between OP or occupational health service and employer can be improved. Previous studies have shown that it can be challenging to involve employers in the recovery and RTW process of workers [47-49]. Therefore, future research needs to focus on how collaboration between OPs, occupational health service, other (mental) health care professionals and employers can be optimized, aiming to achieve adequate guideline-based care.

Next to improving the quality of occupational mental health care by professionals, and improving the collaboration between OPs, occupational health service and employers, it is important to get more insight in what workers themselves need in their recovery and RTW process, and if the provided guidance fits their needs. Future research focusing on the workers level, such as a qualitative study that currently is conducted by Van Gestel and colleagues, may reveal these needs, additional bottlenecks, and facilitators for recovery and work resumption. This can contribute to the improvement of the guideline, and the collaboration between occupational professionals, employer and workers. Regarding the findings of the present study, knowing which specific elements of the guideline-based care contributed to an increased 'RTW self-efficacy' in workers with common mental health disorders, can contribute to the improvement of the guideline. Therefore, future research needs to evaluate the relation between adequate adherence to specific elements of the occupational mental health guideline and workers' 'RTW self-efficacy'.

The past years show an increasing interest in workers' outcomes that are additional to (time to) first and full RTW [43, 50-54], especially since reduced productivity at work in workers across Western countries showed to be much more present in workers with CMD (88%) than in workers without (26%) [2]. RTW might not reflect the quality of workers' work functioning after work resumption. Work functioning reflects the balance between work tasks, health and productivity [51, 52], which is important for both workers and employers. Furthermore, RTW over a period longer than four weeks without recurrences reflects more sustainable RTW [43, 50]. Therefore, future research needs to take into account other workers' outcomes beside RTW when evaluating the effect of interventions, for example work functioning [51].

Conclusion

Despite the extensive intervention, adequate guideline-based care by OPs was not achieved, and therefore it was not possible to evaluate the impact of adequate guideline adherence on workers' RTW. Adequate guideline-based care remains a potential solution to obtain earlier and sustainable RTW in workers sick listed due to CMD. This thesis provides several explanations and suggests areas of improvement for practice and research in occupational mental health care. It is a scientific and societal challenge for the future to create the right conditions that enable high-quality occupational health care for workers sick listed due to mental health problems.

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Summery

Summery

The aim of this thesis is to generate more knowledge on occupational physicians' adherence to a Dutch mental health guideline, and on recovery and return to work (RTW) in workers sick listed due to common mental disorders (CMD).

Chapter 1 provides an overall introduction on the background, organization of the Dutch occupational health care system, and the relevance of the topic. As in many Western countries, in the Netherlands, CMD such as depression, anxiety disorders, adjustment disorders, and stress related disorders often lead to long-term sickness absence. In the Netherlands about 36% of long-term sickness absence is caused by mental health problems, mainly CMDs. Long-term sickness absence is associated with individual suffering, such as loss of social contacts with the risk of social isolation, loss of day structure, reduced probability of eventual RTW with as possible consequence unemployment and a weakened financial position. Besides the individual suffering, the financial costs for employers and society are high. In the Netherlands the total estimated costs of mental health problems for society are reaching 3.3% of the Gross Domestic Product. In view of the substantial consequences for the individual, the employer and society, it is important to reduce sickness absence duration and facilitate earlier RTW of workers. In spite of many years of research, this remains a challenge in workers with CMD.

In The Netherlands, workers sick listed due to CMD are guided by an occupational health professional using a guideline named 'The management of mental health problems of workers by OPs' that was developed by the Netherlands Society of Occupational Medicine (NVAB). This guideline recommends OPs to monitor and evaluate the process of recovery and RTW, and in case of stagnation of this process to use cognitive behavioral techniques to enhance the problem-solving capacity of the sick listed worker or to refer to a mental health professional. A retrospective study on the effect of this first edition of the guideline (developed in 2000) showed that closer adherence to the guideline was associated with a shortened sickness absence duration in workers with adjustment disorders. Another study in which OPs received a three-day guideline training showed that, although OPs had a positive attitude towards using the first edition of the guideline, their actual adherence to the occupational mental health guideline was limited. Therefore, it seemed important to improve OPs' adherence to the current edition of this guideline (revised in 2007) aiming to reduce sickness absence duration in workers sick listed due to CMD.

To improve OPs' guideline adherence a tailored implementation strategy was developed based on the findings from scientific implementation literature on how to improve guideline adherence. This thesis describes the evaluation of this intervention, the degree of actual adherence, and the impact of the intervention and OPs' guideline adherence on workers' outcomes.

The design of this study is described in **Chapter 2**. A two-armed cluster randomized controlled trial was conducted to evaluate the intervention to enhance OPs' guideline adherence. OPs were randomized in an intervention and a control group. The OPs in the intervention group received an eight-session training in small peer-learning groups over the course of a year. The training had a Plan-Do-Check-Act structure in which the content of the guideline was discussed step-by-step following the (key) recommendations of the guideline. In each meeting, the OPs discussed the barriers that hindered them from using the guideline and structured these perceived barriers in accordance with an existing model of Cabana. According to this model guideline adherence could be affected by three main clusters of barriers: 1) knowledge-related barriers (lack of awareness and lack of familiarity), 2) attitude-related barriers (lack of agreement, lack of self-efficacy, lack of outcome expectancy, and inertia of previous practice/lack of motivation) and 3) external barriers that hinder physicians to apply the guideline in practice (patient factors, guideline recommendation factors, and environmental factors). Next, the OPs discussed what solutions were needed to address the perceived barriers, taking into account the context of their daily practice. In addition, OPs developed a joint action plan on how to implement these solutions. In between meetings OPs tested the solutions in practice and in the next meeting they discussed their experiences with tested solutions, and if necessary solutions were adjusted and a new action plan was made. After the one-year training workers sick listed due to CMD and guided by a participating OP, were included in the study. Their data were collected by the registration system of the occupational health service, and by questionnaires at baseline and at 3, 6 and 12 months. The primary outcome was time to full return-to-work. Secondary outcomes were partial return-to-work, total number of sick leave days, CMD-symptoms, and workability. Additional measures used in this thesis are work related self-efficacy (individual's conviction that one has the ability to successfully return to work, perform tasks at work, and cope with work pressure) and the extent of guideline adherence.

Chapter 3 explores the feasibility and impact of the tailored implementation strategy and if this intervention was conducted as planned. Thirty-two OPs in the intervention group received the intervention. Protocol compliance and OPs' experiences were qualitatively and quantitatively assessed. A questionnaire was used to investigate OPs' knowledge, attitude, perceived barriers for using the guideline, and perceived guideline adherence before and after the training. The intervention was conducted as planned; guideline recommendations and related barriers were discussed with peers, (innovative) solutions were found and implemented in practice. After the training, significant improvement ($p < .05$) was found in OPs' knowledge, self-efficacy, and skills to use the guideline, and OPs did not perceive any barriers related to knowledge and self-efficacy. Furthermore, OPs' perceived guideline adherence rose significantly from 49% before the training to 97% after the training ($p < .01$). Moreover, OPs were highly satisfied with the content of the intervention and felt more empowered after the training to guide workers with CMD and to

cooperate with other (mental) health care providers. However, OPs' perceived that external barriers, such as lack of time and barriers related to patient ability and behavior, remained. The results implied that the intervention focusing on perceived barriers and tailor-made solutions seemed to be a feasible method to enhance self-perceived guideline adherence. Moreover, the strategy contributed to OPs' knowledge, attitudes, and skills in using the guideline. The focus on perceived barriers in combination with a PDCA approach seemed to be a feasible strategy to translate identified barriers into a tailor-made implementation intervention, and could be a promising approach to enhance guideline adherence. It is expected that this implementation strategy is suitable for a wider range of guidelines and professionals, as it is a generic approach to overcome barriers that care professionals themselves perceive in a specific situation.

In **Chapter 4** a qualitative study gives an overview of OPs' perceived barriers for using the guideline and suggested solutions to solve these barriers in practice. Thirty-two (6 groups of 4 to 6) OPs received the intervention. All training sessions were audio-taped and transcribed verbatim. Thematic content analysis was performed by two researchers with a selection of 50% (21 out of 42) of the transcripts to identify the perceived barriers and the suggested solutions, using AtlasTi 7.0. The results showed that OPs had limited knowledge of all parts of the guideline as well as of the availability of guideline-related tools. Common attitude-related barriers were lack of agreement with guidelines in general, lack of self-efficacy to perform certain guideline recommendations, and difficulties in changing habits and routine actions. Common external barriers were of a work-contextual nature, such as lack of time, high work pressure, restrictive contracts between occupational health services and employers, and conflicting policies of and a lack of collaboration with other parties (e.g. employer, other healthcare providers). The solutions the OPs came up with themselves to address the perceived barriers during the training period were particularly targeted at knowledge improvement and attitude-related barriers as opposed to external barriers. The most often tested solutions by OPs during the training were sharing information, experiences, tips and tricks and referring to existing tools, or developing new tools to facilitate guideline use. Results from this study suggested that an extensive guideline training and education for groups of OPs was useful in addressing their knowledge and attitude-related barriers. However, for improvement of OPs' guideline adherence not only improvement of knowledge and attitude are needed. Therefore, to optimally implement this or similar guidelines, it is necessary to address work-contextual barriers and other external barriers as well, by focusing on the larger context of Ops' professional performance. It is strongly recommended to engage all relevant stakeholders (e.g. workers, employers, occupational health services, other disciplines) in the guideline implementation process, as well as in its initial development process or revision.

Chapter 5 presents the results of the cluster randomized controlled trial, in which the effect of the intervention to enhance OPs' guideline adherence on the actual guideline adherence was

evaluated. Guideline adherence was assessed by an audit of medical records, using 12 guideline-based performance indicators grouped into 5 key performance indicators. Differences in performance rates of the performance indicators between the intervention and control groups were analyzed, taking into account the multilevel effect. The results showed that overall the degree of guideline adherence was low in both groups. Specifically, low adherence was found in relapse prevention (in 80% of the medical records) and regular contact with the employer (in 79% of the medical records). Adequate adherence was found regarding a rapid first consultation with the worker (in 53% of the medical records). The overall guideline adherence was significantly higher in the intervention group compared to the control group (p=.006). In addition, OPs who received the intervention showed significantly better guideline adherence compared to the control group in four out of five key performance indicators (p<.028). The results implied that an implementation strategy in small interactive sessions focusing on perceived barriers and tailor-made interventions improves adherence to the occupational mental health guideline compared to traditional guideline dissemination. However, guideline adherence to the guideline was still far from optimal and needs to be improved. The low guideline adherence might be explained by the external barriers that continue to hinder the OPs in guideline adherence. Future research and practice should focus on implementation of interventions that target different levels (provider level, worker level and organizational level) and should involve all relevant stakeholders who are committed to implement guideline recommendations.

Chapter 6 evaluates the short-term effect of the intervention to enhance OPs' guideline adherence on the RTW self-efficacy in workers three months after the start of sickness absence. It was also evaluated whether the intervention modified the association between RTW self-efficacy and RTW three months later. In 128 sick listed workers guided by participating OPs, RTW self-efficacy, RTW, and personal, health-related and work-related variables were measured at baseline and three months later. Generalized linear mixed models analysis and linear mixed models analysis were used for the evaluations. The results showed that in workers whose OPs had participated in the intervention RTW self-efficacy increased significantly more than in workers whose OPs had participated in the control group ($t = -2.626$, $p \leq .05$). In addition, higher baseline RTW self-efficacy scores were significantly associated with full RTW three months later (OR 2.20, 95% CI 1.18-4.07), but the intervention did not affect this association. This study contributed to the understanding of the role of RTW self-efficacy in the recovery and RTW process. Since measuring RTW self-efficacy was found to be useful in identifying workers who were at risk for long-term sickness absence in several studies, RTW self-efficacy levels could be used to direct the guidance that is offered in the recovery and RTW process. The findings of this study suggested that levels of RTW self-efficacy can be increased during the first months after the start of sick leave with the use of occupational health care strategies that were supposed to enhance RTW self-efficacy in workers with CMD. This insight contributes to the optimization of

the recovery and RTW process and to the development of interventions within for occupational health care and guidance.

Chapter 7 presents the results of the cluster randomized controlled trial, evaluating the long-term effect of the intervention to enhance OPs' guideline adherence on the sickness absence duration of workers sick listed due to CMD. The trial included 3379 workers, with 1493 in the intervention group and 1886 in the control group. The outcome measures were: time to full RTW, time to first RTW, and total hours of sickness absence. Cox regression analyses and generalized linear mixed model analyses were used for the evaluations. The results showed that the median time to RTW was 154 days among the 3228 workers with CMD. No significant differences occurred in (time to) full RTW between intervention and control group (HR 0.96; 95% CI 0.81 – 1.15) nor for first RTW (HR 0.96; 95% CI 0.80 – 1.15). The mean total hours of sickness absence was 478 hours in the intervention group and 483 hours in the control group.
Overall, the intervention developed to enhance OPs' guideline adherence did not reduce the sickness absence duration in workers with CMD. Possible explanations were the remaining external barriers for guideline use, and that perceived guideline adherence might not represent actual guideline adherence and improved care. Future research and practice should continue the search on how to solve this problem.

Chapter 8 presents a retrospective cohort study in which the associations between OPs' guideline adherence and first and full RTW of workers with CMD during one year follow up after the start of the sickness absence. Possible confounders were included. Twelve performance indicators were developed to assess OPs' guideline use. Medical records of 114 sick listed workers were audited, indicating no (0), low (1) or adequate adherence (2). These results were related to the time to first and full RTW using Cox regression analysis. The study showed low overall guideline adherence by OPs. Therefore, it was not possible to evaluate the associations between *adequate* guideline adherence and the time to RTW in workers with CMD. The low adherence was associated with neither earlier full RTW (HR 1.25 (95%CI 0.82 – 1.89), p = 0.301), nor earlier first RTW (HR 1.07 (95%CI 0.52 – 1.21), p = 0.747) in workers sick listed with CMD. Regular contact between OP and employer was significantly associated with earlier full RTW in workers with CMD (HR 1.87 (95%CI 1.10 – 3.16), p = 0.021). Regular contact between OP and worker was non-significantly associated with earlier full RTW (HR 1.66 (95%CI 0.98 – 2.81), p = 0.058). Contrary to expectations, low-moderate adherence to two other parts of the guideline recommendations ('Monitoring the recovery phase of the worker' and 'Assessment of employers' perspective') were associated with delayed RTW. Future research should explore the association between regular contact between the OP and the employer and earlier RTW in workers further. Considering OPs' guideline adherence was low, potentially there is room for improvement of guidance of workers sick listed with CMD. Probably, future implementation should also target

the level of organizations to reduce organizational constraints that enable professionals to provide high-quality occupational health care. If adequate guideline adherence by OPs is achieved, future studies should explore the impact of adequate adherence on workers' RTW.

Chapter 9 discusses the main findings of this thesis, the methodological considerations and the implications of the findings. It is concluded that, despite the extensive intervention to enhance OPs' guideline adherence, *adequate* guideline-based care by OPs was not achieved, and therefore it was not possible to evaluate the impact of *adequate* guideline adherence on workers' RTW. Low overall guideline adherence was not associated with earlier RTW in workers with CMD. Hence, convincing evidence that this guideline is (in)effective in reducing sickness absence duration or enhancing recovery is still lacking. Adequate guideline-based care remains a potential solution to obtain earlier and sustainable RTW in workers sick listed due to CMD. However, the intervention was conducted as planned, but OPs were not able to address the perceived external barriers in daily practice, as these were beyond their control and concerned decisions made by others (e.g. the occupational health service, or employers). It is plausible that the external barriers were too extensive to be changed by a professional-directed intervention. It is also possible that solving the external barriers is conditional for improving OPs guideline use, and for bringing to effect improved knowledge and a positive attitude in practice.

Future practice needs to focus on how to enhance implementation, how to address the conditional external barriers for guideline use, and how to realize regular contact and collaboration between OP and employer in daily practice. Therefore, it is important that representatives from occupational health services and employers are involved in revising the guideline. Furthermore, the implementation strategy needs to be improved, and should incorporate stakeholders of the organizational level to collaborate with the involved professionals in addressing the conditional external barriers for guideline use and organizational constraints. Moreover, the findings of this thesis underline the importance of changes in the organization of the Dutch occupational health care that provide OPs with more opportunities to adequately adhere to the guideline.

Future research can contribute to the improvement of the guideline, optimizing the implementation and evaluation of revisions of the guideline. Only if OPs adequately adhere to the guideline, it will be possible to optimally evaluate the impact of the guideline on workers' outcomes. Therefore, for future research it is important to get more insight in how employers can facilitate adequate guideline use by OPs, and how collaboration between OP or occupational health service and employer can be improved. Additionally, it is important to get more insight in what workers themselves need in their recovery and RTW process, and if the provided guidance fits their needs. This can contribute to the improvement of the guideline, and the collaboration between occupational professionals, employer and workers. In addition, future research needs to take into account other workers' outcomes besides RTW when evaluating the effect of

interventions, for example work functioning, because RTW might not reflect the quality of workers' work functioning after work resumption.

This thesis provides several explanations and suggests areas of improvement for practice and research in occupational mental health care. It is a scientific and societal challenge for the future to create the right conditions that enable high-quality occupational health care for workers sick listed due to mental health problems.

Samenvatting

Samenvatting

Het doel van dit proefschrift is om meer kennis te genereren over het gebruik van de NVAB richtlijn 'Handelen van de bedrijfsarts bij werkenden met psychische problemen' door bedrijfsartsen en over het daaraan gerelateerde herstel en de werkhervatting van werknemers die ziek zijn gemeld wegens psychische problemen.

Hoofdstuk 1 biedt een algemene inleiding over het onderwerp van dit proefschrift. De organisatie van de Nederlandse arbozorg en de relevantie van het onderwerp worden beschreven. Net als in veel andere westerse landen, komen psychische problemen, zoals depressie, angststoornissen, aanpassingsstoornissen en stress gerelateerde aandoeningen, veel voor in Nederland. Deze psychische problemen leiden vaak tot langdurig ziekteverzuim. In Nederland wordt ongeveer 36% van het langdurige ziekteverzuim veroorzaakt door psychische problemen. Dit langdurige ziekteverzuim heeft veel negatieve consequenties voor het individu, zoals vermindering van sociale contacten met de kans op sociaal isolement, verlies van dag-structuur, verminderde kans om het werk te hervatten met als mogelijk gevolg werkloosheid en een zwakke financiële positie. Naast deze negatieve consequenties voor werknemers zelf, zijn de financiële consequenties voor werkgevers en de maatschappij groot. In Nederland zijn de totale geschatte kosten van psychische problemen voor de maatschappij 3,3% van het bruto nationaal product. Gezien de aanzienlijke gevolgen voor het individu, de werkgever en de maatschappij, is het belangrijk om de ziekteverzuimduur te verkorten. Maar ondanks vele jaren van onderzoek en praktijk experimenten blijft het een uitdaging om de ziekteverzuimduur terug te dringen.

In Nederland worden werknemers die zijn ziek gemeld wegens psychische problemen begeleid door een Arbo professional, meestal door een bedrijfsarts die de richtlijn 'Handelen van de bedrijfsarts bij werkenden met psychische problemen' gebruikt die is ontwikkeld door de Nederland Vereniging voor Arbeids- en Bedrijfsgeneeskunde (NVAB). Volgens kernaanbevelingen van deze richtlijn bewaakt en evalueert de bedrijfsarts het proces van herstel en werkhervatting van de ziek gemelde werknemer. Indien er sprake is van stagnatie van dit proces gebruikt de bedrijfsarts cognitieve gedragstherapie technieken om het probleemoplossend vermogen van de ziek gemelde werknemer te versterken of verwijst hij of zij de werknemer zo nodig door naar een gespecialiseerde zorgverlener. Een retrospectieve studie naar de impact van de eerste editie van de richtlijn (ontwikkeld in 2000) liet zien dat het beter gebruiken van de richtlijn was geassocieerd met een kortere ziekteverzuimduur van werknemers met aanpassingsstoornissen. Een ander onderzoek waarin bedrijfsartsen een driedaagse training ontvingen, liet zien dat ondanks dat bedrijfsartsen een positieve attitude bleken te hebben ten aanzien van het gebruiken van deze richtlijn, hun daadwerkelijke gebruik van de richtlijn minimaal was. Daarom lijkt het belangrijk om het gebruik van de huidige versie van de richtlijn (herzien in 2007) door bedrijfsartsen te vergoten.

Om het gebruik van de richtlijn door de bedrijfsartsen te verbeteren, is een implementatiestrategie ontwikkeld. Deze implementatiestrategie is gebaseerd op

wetenschappelijke literatuur over hoe het gebruik van richtlijnen door zorgprofessionals kan worden verbeterd. Dit proefschrift beschrijft de evaluatie van deze interventie gericht op het verbeteren van het richtlijngebruik door bedrijfsartsen, de mate van richtlijngebruik door de bedrijfsarts na deze interventie en de impact van de interventie en van het daadwerkelijke richtlijngebruik door de bedrijfsartsen op werknemers.

In **Hoofdstuk 2** worden de inhoud van de interventie en de onderzoeksopzet beschreven. Er werd een tweearmig cluster gerandomiseerd, gecontroleerd onderzoek uitgevoerd om de interventie gericht op het verbeteren van het richtlijngebruik door bedrijfsartsen te evalueren. De bedrijfsartsen werden gerandomiseerd in een interventie- en een controlegroep. De bedrijfsartsen in de interventiegroep kregen gedurende een jaar een training van acht bijeenkomsten in kleine groepen met 4-6 andere bedrijfsartsen. De training had een Plan-Do-Check-Act aanpak waarin de inhoud van de NVAB richtlijn stap-voor-stap werd besproken aan de hand van de (belangrijkste) aanbevelingen van de richtlijn. In elke bijeenkomst bespraken de bedrijfsartsen hoe zij de richtlijn gebruikten en welke barrières hen belemmerden bij het gebruik van de richtlijn en zij structureerden de ervaren barrières in overeenstemming met het model van Cabana. Volgens dit model kan richtlijngebruik in de praktijk worden beïnvloed door drie belangrijke clusters van barrières: 1) kennis gerelateerde barrières (gebrek aan bekendheid, gebrek aan vertrouwdheid), 2) attitude gerelateerde barrières (gebrek aan instemming met de richtlijn, gebrek aan 'self-efficacy', gebrek aan uitkomstverwachtingen en gebrek aan motivatie) en 3) externe barrières (factoren die betrekking hebben op de patiënt, factoren die betrekking hebben op de aanbevelingen van de richtlijn, factoren die betrekking hebben op de organisatie). Vervolgens brainstormden de bedrijfsartsen over welke oplossingen nodig waren om de ervaren barrières aan te pakken. Hierbij hielden zij rekening met de context van de dagelijkse praktijk. Daarna stelden de bedrijfsartsen een gezamenlijk plan van aanpak op over hoe zij deze oplossingen in de dagelijkse praktijk gingen implementeren. Tussen de trainingsbijeenkomsten testten de bedrijfsartsen de oplossingen in de praktijk. En in de volgende bijeenkomst bespraken zij hun ervaringen met de geteste oplossingen, en zo nodig werden oplossingen aangepast en werd een nieuw plan van aanpak gemaakt. Na de training werden werknemers, die waren ziek gemeld wegens psychische problemen en die werden begeleid door een deelnemende bedrijfsarts, uitgenodigd om deel te nemen aan het onderzoek. Van werknemers werden gegevens verzameld door middel van het registratiesysteem van de Arbodienst en door vragenlijsten op baseline en na 3, 6 en 12 maanden. De primaire uitkomstmaat was de tijd tot volledige, duurzame werkhervatting. Secundaire uitkomsten waren de tijd tot gedeeltelijke werkhervatting, het totaal aantal dagen ziekteverzuim, psychische problemen en werkvermogen van de werknemer. Aanvullende uitkomstmaten die in dit proefschrift zijn gebruikt, waren werk-gerelateerde 'self-efficacy' (iemands overtuiging dat hij of zij in staat is om met succes het werk

te hervattien, werktaken uit te voeren en met werkstress om te gaan) van de werknemer en de mate van richtlijngebruik door de bedrijfsarts.

Hoofdstuk 3 beschrijft de haalbaarheid en de gevolgen van de implementatiestrategie en of deze volgens plan werd uitgevoerd. Tweeëndertig bedrijfsartsen in de interventiegroep kregen de interventie. Hoe de interventie was uitgevoerd en wat de ervaringen van de bedrijfsartsen waren, werd kwalitatief en kwantitatief geëvalueerd. Er werd een vragenlijst gebruikt om de kennis, de attitude, de barrières voor het gebruik van de richtlijn en de eigen inschatting van de mate waarin zijzelf de richtlijn gebruiken, te meten voor en na de training. De interventie werd uitgevoerd zoals gepland. De richtlijnaanbevelingen en daarbij bijhorende barrières werden met collega's besproken, (innovatieve) oplossingen werden gevonden en in de praktijk getest. Na de training werd bij de bedrijfsartsen een significante verbetering ($p < 0,05$) gevonden van hun kennis, 'self-efficacy' en vaardigheden om de richtlijn te gebruiken. Na de training ervoeren de bedrijfsartsen geen barrières meer met betrekking tot kennis en 'self-efficacy'. Bovendien steeg de eigen inschatting van de mate waarin zijzelf de richtlijn gebruiken aanzienlijk van 49% voor de training tot 97% na de training ($p < 0,01$). Daarbij waren de bedrijfsartsen zeer tevreden met de inhoud van de interventie en voelden zij zich na de training meer empowered om werknemers met psychische problemen te begeleiden en samen te werken met andere zorgverleners. De ervaren externe barrières die het richtlijngebruik belemmeren, zoals gebrek aan tijd en barrières gerelateerd aan de mogelijkheden en het gedrag van de patiënt, bleven echter bestaan. De resultaten impliceerden dat de interventie gericht op ervaren barrières en op maat gemaakte oplossingen een haalbare methode lijkt om richtlijngebruik te verbeteren. Verder heeft de implementatiestrategie bijgedragen aan het verbeteren van kennis, attitude en vaardigheden van bedrijfsartsen om de richtlijn te gebruiken. De focus op barrières in combinatie met een Plan-Do-Check-Act aanpak lijkt een haalbare strategie om geïnventariseerde barrières te vertalen in op maat gemaakte oplossingen voor de praktijk en een veelbelovende aanpak om het richtlijngebruik van zorgprofessionals te verbeteren. Omdat het een algemene benadering betreft om ervaren barrières in een specifieke situatie in kaart te brengen en op te lossen, is het de verwachting dat deze implementatiestrategie ook geschikt is voor het implementeren van richtlijnen bij professionals uit andere zorgsectoren.

In **hoofdstuk 4** geeft een kwalitatieve studie een overzicht van de door bedrijfsartsen ervaren barrières voor het gebruik van de richtlijn. Daarnaast worden de oplossingen om deze barrières in de praktijk aan te pakken die door bedrijfsartsen zijn bedacht en getest, beschreven. Tweeëndertig (6 groepen van 4 tot 6) bedrijfsartsen ontvingen de interventie. Van alle bijeenkomsten werden geluidsopnames gemaakt en deze zijn letterlijk getranscribeerd. De thematische inhoud analyse werd uitgevoerd door twee onderzoekers met een selectie van 50% (21 van de 42) van de transcripten van de bijeenkomsten om de barrières en de voorgestelde

oplossingen te identificeren met behulp van AtlasTi 7.0. De resultaten laten zien dat bedrijfsartsen beperkte kennis hadden van alle delen van de richtlijn en van de beschikbaarheid van richtlijn-gerelateerde hulpmiddelen. Attitude-gerelateerde barrières waren een gebrek aan instemming met richtlijnen in het algemeen, een gebrek aan 'self-efficacy' ten aanzien van bepaalde richtlijnaanbevelingen en problemen bij het veranderen van gewoonten en routinehandelingen. Externe barrières waren van werk-contextuele aard, zoals gebrek aan tijd, hoge werkdruk, beperkende contracten tussen de Arbodienst en werkgevers en tegenstrijdig beleid van en een gebrek aan samenwerking met andere partijen (bijvoorbeeld werkgever, andere zorgaanbieders). De oplossingen waar bedrijfsartsen zelf mee kwamen om de ervaren barrières mee op te lossen in de praktijk waren vooral gericht op vergoten van kennis en het verminderen van attitude-gerelateerde barrières en in mindere mate op het verminderen van externe barrières. De meest geteste oplossingen door bedrijfsartsen tijdens de training waren het delen van informatie, ervaringen, tips en trucs en bestaande instrumenten en het ontwikkelen van nieuwe tools waarmee het gebruik van de richtlijn kan worden vergemakkelijkt. De resultaten van deze studie suggereerden dat een uitgebreide interactieve groepstraining voor bedrijfsartsen inderdaad nuttig kan zijn om hun kennis en attitude gerelateerde barrières voor het gebruiken van de richtlijn te verbeteren vergeleken met traditionele richtlijn implementatie. Om deze of soortgelijke richtlijnen optimaal te kunnen gebruiken lijkt het echter noodzakelijk om ook de externe barrières aan te pakken door tevens de werkcontext van de bedrijfsartsen te betrekken in de interventie. Hierbij wordt betrokkenheid van alle relevante stakeholders (bijvoorbeeld werknemers, werkgevers, Arbodiensten en andere disciplines) gedurende het implementatieproces, maar ook tijdens de ontwikkeling of herziening van de richtlijn sterk aanbevolen.

Hoofdstuk 5 beschrijft de resultaten van het cluster gecontroleerde, gerandomiseerde onderzoek, waarbij het effect van de interventie (gericht op het verbeteren van het richtlijngebruik door bedrijfsartsen) op het daadwerkelijk gebruik van de richtlijn door bedrijfsartsen werd geëvalueerd. De mate van richtlijngebruik werd in kaart gebracht door de medische dossiers van werknemers te beoordelen met behulp van 12 prestatie-indicatoren, geclusterd tot 5 hoofd-prestatie-indicatoren, die werden ontwikkeld op basis van de aanbevelingen van de richtlijn. De verschillen in prestatiescores tussen de interventie- en controlegroep werden geanalyseerd. Hierbij werd rekening gehouden met het multilevel effect. De resultaten toonden aan dat over het algemeen de mate van het richtlijngebruik laag was in beide groepen. In het bijzonder werd laag richtlijngebruik gevonden bij terugvalpreventie (in 80% van de medische dossiers) en regelmatig contact met de werkgever (in 79% van de medische dossiers). Adequaat richtlijngebruik werd gevonden met betrekking tot een snel eerste overleg met de werknemer (in 53% van de medische dossiers). Het totale richtlijngebruik was significant hoger in de interventiegroep dan in de controle groep ($p = 0,006$). Daarnaast hadden de

bedrijfsartsen in de interventie groep beter richtlijngebruik in vergelijking met de controlegroep voor 4 van de 5 hoofd prestatie-indicatoren (p <0,028). De resultaten van deze studie suggereren dat een uitgebreide interactieve groepstraining voor bedrijfsartsen nuttig kan zijn om hun richtlijngebruik te verbeteren vergeleken met traditionele richtlijn implementatie. Echter het richtlijngebruik was nog verre van optimaal en moet meer worden verbeterd. Het lage richtlijngebruik kan worden verklaard door de externe barrières die de bedrijfsarts belemmeren bij het uitvoeren van de richtlijn. Toekomstige initiatieven om richtlijnen te implementeren moeten zich richten op interventies die gericht zijn op de verschillende betrokken niveaus (bedrijfsarts niveau, werknemer niveau en organisatieniveau) en zullen al deze partijen bij de implementatie van een richtlijn moeten betrekken.

Hoofdstuk 6 beschrijft het korte termijn effect van de interventie (gericht op het verbeteren van het richtlijngebruik door bedrijfsartsen) op de werk-gerelateerde 'self-efficacy' (iemands overtuiging dat hij of zij in staat is om met succes het werk te hervattien, werktaken uit te voeren en met werkstress om te gaan) van werknemers drie maanden na de start van het ziekteverzuim. Ook werd onderzocht of de interventie de associatie tussen werk-gerelateerde 'self-efficacy' op baseline en werkhervatting drie maanden later beïnvloedde. Bij 128 werknemers, die waren ziek gemeld wegens psychische problemen en begeleid door een deelnemende bedrijfsarts, werden de werk-gerelateerde 'self-efficacy', tijd tot werkhervatting en persoonlijke, gezondheid-gerelateerde en werk-gerelateerde uitkomstmaten gemeten op baseline en drie maanden later. Generalized linear mixed model analyse en linear mixed models analyse werden gebruikt voor de evaluaties. De resultaten lieten zien dat bij werknemers van wie de bedrijfsarts had deelgenomen aan de interventie de werk-gerelateerde 'self-efficacy' aanzienlijk meer steeg dan bij werknemers in de controlegroep ($t = -2.626$, $p \leq 0.05$). Daarnaast waren hogere baseline scores van werk-gerelateerde 'self-efficacy' significant vaker geassocieerd met volledige werkhervatting dan met geen werkhervatting drie maanden later (OR 2.20, 95% CI 1.18-4.07). Maar de interventie bleek geen invloed te hebben op deze associatie. Dit onderzoek draagt bij aan het beter begrijpen van de rol van werk-gerelateerde 'self-efficacy' in het herstel- en werkhervattingsproces. Aangezien meerdere studies hebben laten zien dat de mate van werk-gerelateerde 'self-efficacy' samenhangt met het risico dat werknemers hebben op langdurig ziekteverzuim, kan de mate van werk-gerelateerde 'self-efficacy' worden gebruikt om de begeleiding tijdens het herstel- en werkhervattingsproces te verbeteren. De bevindingen van dit onderzoek suggereerden dat het niveau van werk-gerelateerde 'self-efficacy' in de eerste maanden na de start van het ziekteverzuim kon worden verhoogd door de bedrijfsgeneeskundige begeleiding. Dit inzicht kan bijdragen aan het optimaliseren van het herstel en werkhervattingsproces en de ontwikkeling van bedrijfsgeneeskundige begeleiding.

Hoofdstuk 7 beschrijft de resultaten van het cluster gecontroleerde, gerandomiseerde onderzoek, waarin het lange termijn effect werd geëvalueerd van de interventie (gericht op het verbeteren van het richtlijngebruik door bedrijfsartsen) op de ziekteverzuimduur van werknemers die zijn ziek gemeld wegens psychische problemen. In het onderzoek waren de data van 3379 werknemers beschikbaar, waarvan 1493 mensen in de interventiegroep en 1886 mensen in de controlegroep zaten. De uitkomstmaten waren: tijd tot volledige, duurzame werkhervatting, tijd tot eerste werkhervatting, en het totaal aantal uren ziekteverzuim. Cox regressie analyse en Generalized linear mixed model analyse werden gebruikt voor de evaluaties. De resultaten toonden dat de mediane tijd tot werkhervatting 154 dagen was onder 3228 werknemers. Er werden geen significante verschillen gevonden in (tijd tot) volledige, duurzame werkhervatting tussen de interventie- en de controlegroep HR 0,96 (95% CI 0,81-1,15), noch voor de eerste werkhervatting HR 0,96 (95% CI 0,80-1,15). Het gemiddeld totaal aantal uren ziekteverzuim was 478 uur in de interventiegroep en 483 uur in de controlegroep. Over het algemeen heeft de interventie gericht op het verbeteren van het richtlijngebruik door bedrijfsartsen de ziekteverzuimduur van werknemers niet verminderd. Mogelijke verklaringen waren dat de blijvende externe barrières het richtlijngebruik belemmeren en dat ervaren richtlijngebruik (zoals in Hoofdstuk 3 beschreven) wellicht niet overeenkomt met daadwerkelijk richtlijngebruik. In het algemeen hebben meerdere, recente onderzoeken langdurig ziekteverzuim laten zien bij werknemers met psychische problemen, wat aangeeft dat dit nog steeds een groot probleem is voor de samenleving. Toekomstig onderzoek en de praktijk zullen de zoektocht naar de oplossing van dit probleem moeten voortzetten.

Hoofdstuk 8 beschrijft een retrospectieve cohort studie waarin de associaties tussen de mate waarin bedrijfsartsen de richtlijn gebruiken en de tijd tot werkhervatting van werknemers met psychische problemen worden geëvalueerd, gedurende één jaar follow-up na de start van het ziekteverzuim. Hierbij werd rekening gehouden met mogelijk confounders. Er werden 12 prestatie-indicatoren ontwikkeld die gebaseerd zijn op de aanbevelingen van de richtlijn om de mate van richtlijngebruik door de bedrijfsarts mee te beoordelen. De medische dossiers van 114 ziek gemelde werknemers werden beoordeeld, waarbij de score aangaf dat er sprake was van geen (0), laag (1) of een adequaat (2) richtlijngebruik. De mate van richtlijngebruik werd gerelateerd aan de tijd tot volledige, duurzame werkhervatting en de tijd tot eerste werkhervatting door middel van Cox regressie analyse. De resultaten lieten een laag algemeen richtlijngebruik door bedrijfsartsen zien. Hierdoor was het niet mogelijk om de associaties tussen *adequaat* richtlijngebruik door bedrijfsartsen en werkhervatting van werknemers te meten. Het lage richtlijngebruik was niet geassocieerd met eerdere volledige, duurzame werkhervatting (HR 1,25 95% CI 0,82-1,89, p = 0,301), noch met eerdere eerste werkhervatting (HR 1,07 95% CI 0,52-1,21, p = 0,747) van werknemers die zijn ziek gemeld wegens psychische problemen. Regelmatig contact tussen bedrijfsarts en werkgever was significant geassocieerd met eerdere volledige,

duurzame werkhervatting van werknemers (HR 1,87 (95% CI 1,10-3,16), p = 0,021). Regelmatig contact tussen bedrijfsarts en werknemer was niet significant geassocieerd met eerdere volledige, duurzame werkhervatting (HR 1.66 (95%CI 0.98 -2.81), p = 0.058). In tegenstelling tot de verwachtingen, werd een matige naleving van de twee onderdelen van de richtlijn ('Monitoren van de herstelfase van de werknemer' en 'Evaluatie van het werkgevers perspectief') in verband gebracht met een vertraagde werkhervatting. Het is aan te bevelen om de relatie tussen regelmatig contact tussen de bedrijfsarts en de werkgever en eerdere werkhervatting verder te verkennen in toekomstig onderzoek. Het lage richtlijngebruik suggereert dat er potentieel veel ruimte voor verbetering is in de begeleiding van deze werknemers. Het is aan te bevelen dat de toekomstige implementatie van de richtlijn zich ook richt op het organisatieniveau om de organisatorische beperkingen te verminderen zodat professionals in staat worden gesteld om kwalitatief hoogwaardige bedrijfsgeneeskundige zorg te bieden. Indien er adequaat richtlijngebruik door bedrijfsartsen wordt bereikt, kan in toekomstige onderzoek de invloed van adequaat richtlijkgebruik op werknemers worden onderzocht.

In **hoofdstuk 9** wordt dit proefschrift bediscussieerd. In dit hoofdstuk worden de belangrijkste bevindingen, de methodologische overwegingen en de implicaties beschreven. Geconcludeerd wordt dat, ondanks de omvangrijke en intensieve interventie gericht op het verbeteren van het richtlijngebruik door bedrijfsartsen, adequaat richtlijngebruik door bedrijfsartsen niet is gerealiseerd, waardoor het niet mogelijk was om de impact van adequaat richtlijngebruik door bedrijfsartsen op de werkhervatting door werknemers te evalueren. Hierdoor ontbreekt overtuigend bewijs dat deze richtlijn al dan niet effectief is in het verminderen van de ziekteverzuimduur of het bespoedigen van het herstel van werknemers die zijn ziek gemeld wegens psychische problemen. Adequate zorg gebaseerd op de bedrijfsgeneeskundige richtlijn blijft een mogelijke manier om eerdere en duurzame werkhervatting te bereiken. In dit proefschrift werd de interventie uitgevoerd zoals gepland, maar de bedrijfsartsen bleken niet in staat om de ervaren externe barrières voor richtlijngebruik in de dagelijkse praktijk aan te pakken. Vaak doordat het aanpakken van deze externe barrières buiten hun mogelijkheden lag en het randvoorwaarden en afspraken betrof die waren vastgelegd door anderen (bijvoorbeeld de Arbodienst of werkgevers). Het is aannemelijk dat de externe barrières te complex waren om te worden veranderd door een interventie gericht op de zorgprofessional alleen. Het is mogelijk dat het oplossen van de externe barrières een voorwaarde is voor het verbeteren van het richtlijngebruik door de bedrijfsarts, en voor het beter toepassen van kennis en een positieve houding in de praktijk.

In de toekomst zal de praktijk zich moeten concentreren op hoe de implementatie van een richtlijn kan worden verbeterd, hoe de externe barrières voor adequaat richtlijngebruik kunnen worden opgelost, en hoe regelmatig contact en samenwerking tussen de bedrijfsarts en de werkgever kan worden gerealiseerd. Daarom is het belangrijk dat de vertegenwoordigers van

de Arbodiensten en werkgevers worden betrokken bij de herziening van de richtlijn. Verder zal de implementatiestrategie moeten worden verbeterd en hierbij zullen stakeholders van het organisatorisch niveau moeten worden betrokken zodat zij samen met de betrokken zorgprofessionals werken aan de aanpak van de externe barrières voor richtlijngebruik en van organisatorische beperkingen. Bovendien onderstrepen de bevindingen van dit proefschrift het belang van veranderingen in de organisatie van de Nederlandse bedrijfsgezondheidszorg, zodat bedrijfsartsen meer mogelijkheden krijgen om adequaat de richtlijn te volgen.

Toekomstig onderzoek kan bijdragen aan het verbeteren van de richtlijn, het optimaliseren van de implementatie van de richtlijn en het evalueren van een herziene richtlijn. Alleen als bedrijfsartsen de richtlijn adequaat gebruiken, zal het mogelijk zijn om de gevolgen van de richtlijn voor werknemers optimaal te evalueren. Daarom is het belangrijk om meer inzicht te krijgen in hoe werkgevers kunnen bijdragen aan adequaat richtlijngebruik door bedrijfsartsen en hoe de samenwerking tussen bedrijfsarts of Arbodienst en werkgevers kan worden verbeterd. Verder is het belangrijk om meer inzicht te krijgen in wat werknemers zelf nodig hebben in hun herstel- en werkhervattingsproces en of de aangeboden begeleiding past bij hun behoeften. Dit kan bijdragen aan de verbetering van de richtlijn en de samenwerking tussen zorgprofessionals, werkgevers en werknemers. Bovendien wordt aanbevolen dat toekomstig onderzoek naar het effect van interventies op werknemers ook andere uitkomstmaten (bijvoorbeeld werk-functioneren) meeneemt, omdat werkhervatting op zich niet noodzakelijkerwijs iets zegt over de kwaliteit van functioneren op het werk na werkhervatting.

Dit proefschrift biedt verschillende verklaringen en draagt verbeterpunten aan voor de praktijk en voor onderzoek op het gebied van bedrijfsgeneeskundige zorg bij psychische problemen. Het is een wetenschappelijke en maatschappelijke uitdaging voor de toekomst om de juiste omstandigheden te creëren die kwalitatief goede bedrijfsgeneeskundige zorg mogelijk maken voor werknemers die zijn ziek gemeld wegens psychische problemen.

Dankwoord

Dankwoord

Voorjaar 2010: zal ik solliciteren? Het leek mij een heel interessant onderzoek bij een sympathiek onderzoeksinstituut, maar ja wel helemaal in Tilburg… Ik miste het eerste sollicitatiegesprek doordat ik niet kon terugvliegen vanuit Napels vanwege de aswolk van een IJslandse vulkaan. Gelukkig mocht ik alsnog langskomen voor een gesprek. In oktober 2010 ben ik vol enthousiasme begonnen aan dit onderzoeksproject en nu in 2016 is het af, echt waar!

Dat was natuurlijk niet gelukt zonder een goed projectteam!
Evelien, jij was mijn dagelijks begeleider bij Tranzo. Jouw enthousiasme werkt aanstekelijk en jouw betrokkenheid heb ik al die jaren erg gewaardeerd. Jouw kritisch commentaar bij het schrijven van artikelen vond ik soms frustrerend, maar het heeft zeker bijgedragen aan een betere kwaliteit. Verder heb ik het laagdrempelig binnen kunnen lopen voor overleg, vragen en advies altijd zeer gewaardeerd.
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Hilde, zonder jou was de werving van deelnemers vermoedelijk gestagneerd tijdens mijn zwangerschapsverlof. Zonder deelnemers geen data en geen resultaten, dus heel erg bedankt voor het meewerken aan werving van deelnemers.

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Met mijn vrienden en familie heb ik de afgelopen jaren over het algemeen gelukkig gewoon die dingen gedaan die we anders ook hadden gedaan. Zo'n onderzoek uitvoeren en een proefschrift schrijven duurt soms lang, maar uiteindelijk is het ook maar gewoon werk. Ik wil jullie bedanken voor jullie belangstelling, meedenken, oppassen, goede gesprekken, gezellig samen eten, mooie wandelingen en andere leuke dingen die we samen hebben ondernomen. Dat waardeer ik zeer!

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Jasper en Marit, dat jullie zijn geboren, is verreweg het mooiste dat is gebeurd gedurende dit promotietraject ☺ Ik ben heel erg blij met jullie!

Dankjewel!
Karlijn